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Sharpening Edged Tools.

"It has long been known that the simplest method of sharpening a razor is to put it for half an hour in water to which has been added one-twentieth of its weight of muriatic or sulphuric acid, then wipe it off, and after a few hours set it on a hone. The acid here supplies the place of a whetstone, by corroding the whole surface uniformly, so that nothing further but a smooth polish is necessary. The process never injures good blades, while badly hardened ones are frequently improved by it, although the cause of such improvement remains unexplained.

Of late, this process has been applied to many other cutting implements. The workman, at the beginning of his noon spell, or when he leaves off in the evening, moistens the blades of his tools with water acidified as above, the cost of which is almost nothing This saves the consumption of time and labor in whetting, which moreover speedily wears out the blades. The mode of sharpening here indicated would be found especially advantageous for sickles and scythes."

[The above appeared in the *National Intelligencer*, translated from a German scientific journal. It may be a good recipe, but we cannot, for the life of us, see into its philosophy. We can understand how the dilute sulphuric acid will combine with some of the metal, and reduce it to an oxyd, but as it will seize upon the edge of the tool more readily than any other part, how then can it sharpen the edge by biting or eating it off. Dilute sulphuric acid is used in all our iron foundries for eating off the scale and reducing the metal of castings.

To Extract Grease from Cloth.

The following is infallible:—To sixteen ounces of rectified spirits of wine add ten grains of carbonate of potash (pure,) half an ounce of essential oil of bergamot, and one ounce of sulphuric ether; mix, and keep in a glass-stoppered bottle. Apply with a piece of sponge, soaking the cloth thoroughly when the grease is not recent. The mixture emits a peculiarly fragrant odor, and being a fluid soap, chemically composed, will be found a perfect solvent of oily matter.— [Exchange.

[The above is a good receipt for the purpose stated; of this we judge from the nature of the substances of which it is composed. A cheaper fluid for the same purpose, and one that will answer equally as well, may be made of an ounce of liquid ammonia and four ounces of alcohol mixed with an equal quantity of water.

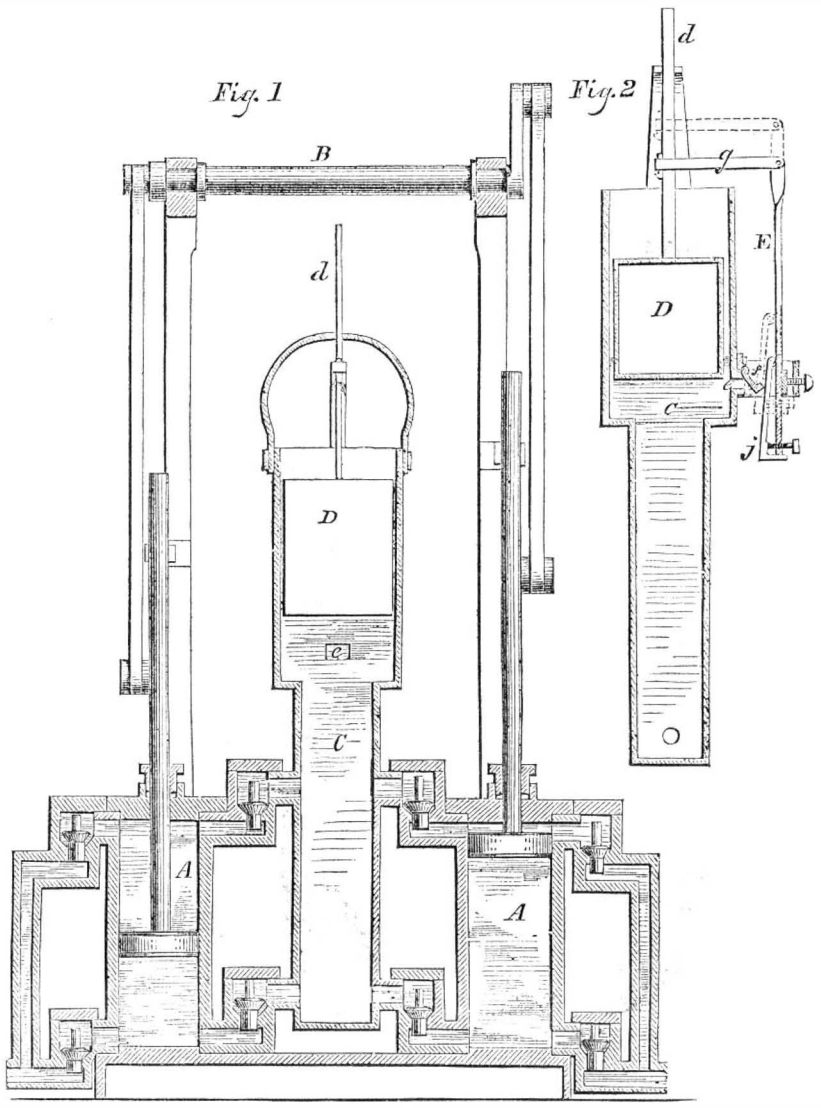
Ballooning Extraordinary.

Harvey Moore, of Lawrence Co., Ohio, claims to have discovered a principle by which direction can be given to an air-car, and its speed accelerated or retarded at the will of the engineer or pilot who may take charge of it, and without the use of ballast or waste of gas in the ascent or descent.— [Exc.

[Will he demonstrate his discovery to us?

24,000 bales of cotton were recently sold in New Orleans in one day.

NEW GOVERNOR FOR MARINE STEAM ENGINES.



Regulators of some sort are considered almost indispensable to the proper working of stationary steam engines. Their office is to graduate the quantity of steam admitted to the cylinder, according to the work required, at each movement, to be done. For example, when an engine is set to driving a number of different machines, some of them, perhaps unexpectedly break down and stop; less power will be required to drive those that remain in operation, and the governor accordingly shuts off a part of the steam; if this were not done the engine would be jerked or strained by the immediate increase in its velocity, and finally become broken. On the other hand, where the work to be done is suddenly increased, more steam will be required, and the governor must instantly open the throttle valve and let it on; otherwise the engine and machinery will come to a dead stop. The governor, in effect, then, is an automatic engineer, having charge of the speed of the machine, under iron bonds, not to allow it to go either too fast or too slow; it exercises an incessant supervision, requires no watching, and never becomes tired or sleepy. Governors are just as necessary for the engines used in sea navigation as for stationary machines, but they have not, as yet, been introduced on steam vessels because no suitable regulating apparatus has been introduced. Marine engines are therefore required to be built excessively strong and massive, in order to withstand the injurious effects of irregular movement; in very rough weather it is generally necessary to run them at a low speed.

The common governor consists of a spindle furnished with swinging weighted balls; its operation is well understood; it must always stand perfectly plumb, else it fails to be of service; therefore it is of no use on board of steamers.

The marine governor herewith illustrated is intended to supply the want to which we have alluded; it is the invention of Mr. Henry Webster, of Beetown, Wis., and was patented June 5th, 1855.

The nature of the improvement consists in the employment of a water well, which is kept constantly filled with water by means of pumps operated by the engine; said well contains a float, which is connected with the throttle valve; when the water in the well falls or rises beyond a certain level, the float moves accordingly, operates the valve, and lets on or shuts off the steam.

In fig. 1, which is a side sectional view, the pump cylinders are indicated by A; the pumps are of the ordinary construction, and are operated by the rocking shaft, B; C is the water well, and D the float; *d* is the connecting rod between the float and throttle valve; *e* is an escape aperture in the well, which determines the water level; when the engine works too quick, the pumps throw up water faster than it can escape through the aperture, *e*, and consequently the float rises and shuts off steam; when the engine moves too slow, less water is pumped up and the float falls, opens the throttle and lets on steam.

Fig. 2 is a cross section of the water well, and gives a side view of the aperture, *e*, with other appurtenances; *f* is a valve covering the aperture, *e*; *j* is a wedge attached to the sliding rod, E, which moves up and down with the float, being fastened to the latter by means of the strap, *g*; when the rod, E, rises, it brings the wedge, *j*, against valve *f*, and almost closes the aperture, *e*; the water escape being thus nearly cut off, the well fills more rapidly, and the rise of the float is hastened; the object of the valve, *f*, and its immediate connections, are to render the float sensitive and quick in its movements; this is a very excellent feature of the invention. Set screws are provided which adjust the inclination of wedge, *j*, and the consequent throw of valve, *f*.

The subject of marine governors is important. The present improvement is one of simplicity and apparent excellence; we commend it to the careful examination of engineers, and and others interested in such matters.

Further information respecting this patent can be had by addressing the inventor.

La Diorophe.

This is the graceful title of a very finely-built and ingeniously arranged carriage manufactured by Rock & Bro., of Hasting, England, and exhibited at the Paris Exhibition.

It combined the advantages of three distinct vehicles, viz., a close carriage, a barouche, or half-headed carriage, and an entirely open carriage, thus adapting it to all climates and seasons.

The principle of its construction is very simple, and there is not much danger of its getting out of order, nor can any mistake be easily made in changing it from one form to another—which operation is accomplished in a few minutes with great ease

An eye or ring is fixed in the roof of the close carriage, and made to drop into a recess out of sight, when not wanted. When the change is to be made, a hook attached to a cord passing over pullies fixed to the ceiling of coach-house is passed into the ring, and the head being balanced by a counterpoise at the opposite end of the cord, is raised with the utmost facility, and remains suspended until wanted again. A similar arrangement is used for the barouche head, and thus one person may effect all the changes, however large the carriage may be. Its economy is evident from the fact that it costs but little more than an ordinary carriage, although it possesses so many additional advantages.

Lubricating Oil.

To the advertisement of Mr. Pease in another column we would refer our readers who have occasion to use oil for machinery. We have seen most flattering certificates from establishments that have used this oil, and it is pronounced by all a valuable lubricator.

Lecture on the Gulf Stream.

Prof. Bache, Superintendent of the Coast Survey, delivered a lecture in the University Chapel, this city, on the evening of the 17th inst., on the above subject. The Chapel was crowded, and the lecture was an able one. In the course of his lecture he said: "The value of the discoveries which had recently been made by Prof Maury and others, in reference to the current of the Gulf Stream was not to be predicted. It would be estimated shortly in the history of our navigntion."

Lecture on Light.

Prof. R. Grant delivered a lecture in the Tabernacle, this city, on the evening of the 17th inst., and exhibed his calcium light for lighthouses. This is an improvemeut on what is called the "Drummond Light," viz.: the burning of two gases, oxygen and hydrogen, on a piece of lime.

New Use for Gutta Percha.

The model of an ingenious improvement in steam-engines, lately presented at our office to be patented, was composed of gutta percha. The maker informed us that the substance was very easily worked into the desired shape. For many kinds of models it appears to be a very convenient and time-saving material.

It is again reported that coal has been found at San Diego, in California. We hope so; but as such reports have been circulated a number of times, we wait for a sample to convince us of the reality of such a discovery.

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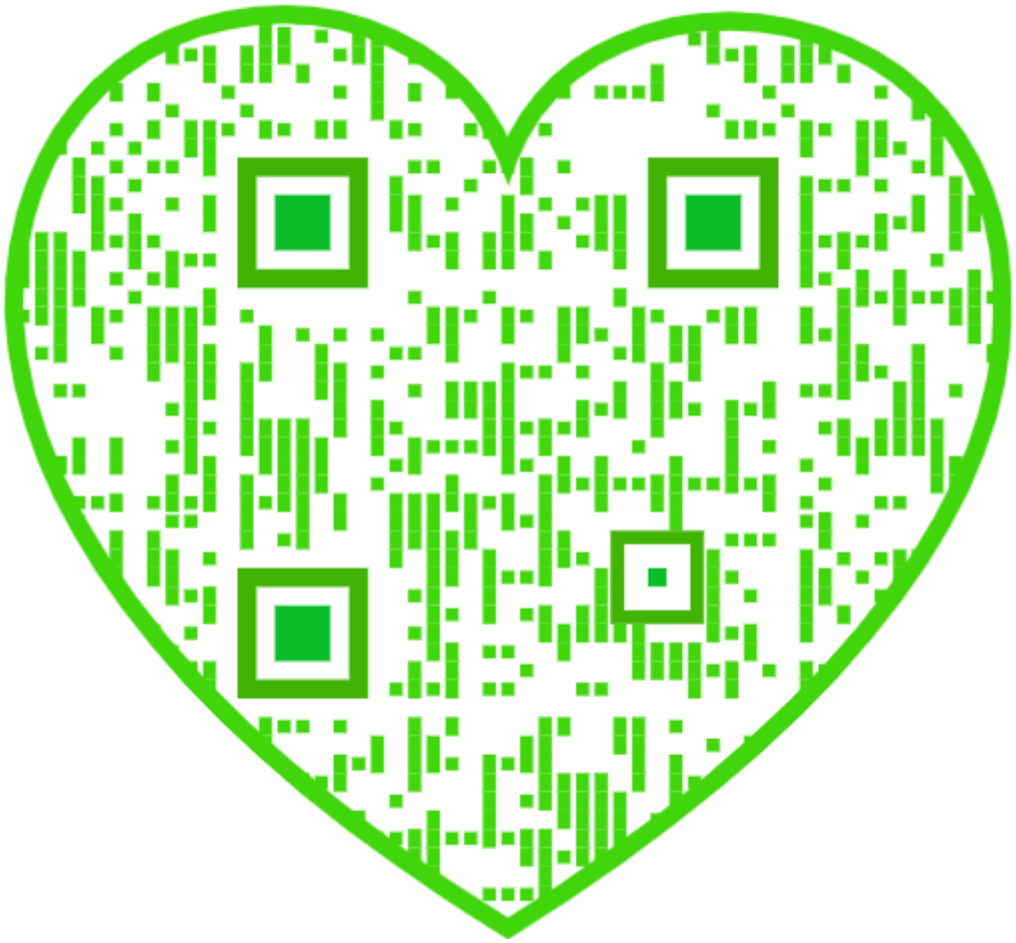

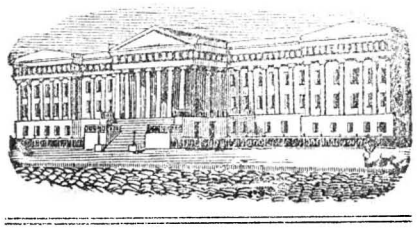

[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING JAN. 15, 1856.

STERN PROPELLER—John Beattie, of Liverpool, Eng. Patented in England Sept. 5th, 1850: I claim the construction of an open wrought-iron stern-frame, E E E, forming part with the keel, H, of the vessel, and receiving the rudder, substantially as described.

VARIABLE DIAL FOR DIVIDING ENGINES—Wm. H. Brown, of Worcester, Mass. I do not claim the use of gearing as a means of transmitting or varying rotary motion.

But I claim causing both the index and dial to rotate at the same time by means substantially the same, and for the purpose set forth.

EXTENSION RAILROAD CAR—Jos. S. Brown, of Lowell, Mass.: I claim extending the floor and sides of cars outwards, laterally, by means of racks and pinions and other machinery connected to them, or otherwise, so as to give a larger area to the floor, and so enlarge the capacity of the car, essentially in the manner and for the purposes set forth.

FEEDING PAPER—Saml. I. Chapman, of Charleston, S. C.: I do not claim feeding paper to printing presses by atmospheric pressure, irrespective of the construction and arrangement of parts shown, for various devices have been patented for that purpose.

But I claim, 1st, separating and detaching the uppermost sheet of paper on the feed board, R, from those underneath it, and properly presenting said sheet to the fingers, nippers, or other device by which it is conveyed to the printing press or to the form thereon, by means of the box E, valve J, and holder or lifter H, the above parts being constructed and arranged as shown, and operating in connection with a vacuum produced in the box, E, and a blast through the tube, Q, the vacuum and blast being produced by an air pump, B, or its equivalent.

2d, I claim operating the feed board, R, by means of the cams, u, plate, V, spring, m, and socket, T, and screw rod, S, fitting into said socket, as shown and described, motion being given the socket by means of a collar, X, attached thereto by a feather, r, whereby the feed board is made to rise and fall, to convey the sheets to the holder or lifter, and the diminishing hight of the pile of paper compensated for, and also any irregularity in the thickness of the sheets.

3d, I claim the feed-board, R, operated as shown, in combination with the valve, J, holder or lifter, H, and bar, E, operating in connection with the vacuum produced in the box, E, and the blast in the tube, Q, in the manner and for the purpose shown and described.

CURING DISEASES OF THE GENITAL ORGANS—Joseph Cheever, of Boston, Mass.: I am aware that there is nothing new in the application of galvanic electricity to the cure of diseases, and that electro-positive and electro-negative metals have been applied in pads, and in various ways, to diseased parts of the human system. I therefore do not claim such, nor do I claim making a scrotum sack of net work.

But I claim combining the electric plates of an elastic scrotum sack by chains, or such a series of electrical conductors, extending from one to the other, as described, as will permit the necessary expansion or contraction of the sack to take place, without obstruction therefrom.

I also claim extending the connecting chain of the positive and negative plates, into and throughout one of the straps of the scrotum sack, and thence into and through the body belt, substantially in the manner, and so as to protect said chain from injury, as specified.

HEADING BOLTS—H. M. Clark, of New Britain, Conn. I claim, first, the arrangement shown and described of the two heading dies, N n, when operating together in such a manner that while neither die is in motion or at rest without a like action of the other, the one, or internal heading die, n, receives an abrupt accelerated motion towards the close of the joint advance movement of the two dies, by means of the arrangement of the dies in the general slide, o, in combination with the lever, q, or its equivalent, acting in concert therewith, essentially as, and for the purposes set forth.

Second, I claim giving the gauge, f, the several intermittent movements specified, upwards, downwards, and laterally, whereby after performing its office of gauging, it moves away to give room for the heading dies to operate, and afterwards suddenly descends, to detach the bolt from the clamp, and by said action or blow to clear itself of any adhering scale or dirt, as described.

SECURING GLASSES OF LANTERNS—Hezekiah Crout, of Baltimore, Md.: I claim the application of the flanged removable bar, for the purpose specified.

HEADING SPIKES—Elisha H. Collier, of Scituate, Mass. I claim hanging the die-plate or anvil upon centers or bearings, in such a manner that it can be reversed, or its under face brought uppermost, the said die plate or angle being provided with a double set of die holes, as described and for the purpose specified.

OPERATING FIRE ENGINES—John P. Philo & George Cowing, of Seneca Falls, N, Y.: We claim the arrangement of the toggles, G G, shaft, D, arm, F, and rods, d d, for operating the pistons, H H, substantially as shown and described.

HYDRANT—C. J. Cowperthwaite, of Philadelphia, Pa. I claim the cylinder, F, fitted over the conical projection on the bottom of the case, A, said cylinder having valves, G O, within it, and an elastic cap or covering, K, through which the valve rod, H, passes, and to which cap said rod is attached, the cylinder being secured on the conical projection by means of the bent rod, M, and cap, N, of the case, A, substantially as shown, for the purpose specified.

GAS BURNERS—Chas. A. Cummings & Cortland Douglass, of New London, Conn.: We claim the interposition between two jets or streams of gas issuing from the same burner, of a plate, b, substantially as, and for the purposes set forth.

LOCK GATE VALVES—Dewitt C. Cumings, of Fulton, N. Y.: I claim the arrangement and construction of valves or paddle gates for canal locks, substantially as herein described, whereby the sand and grit in the water is washed and settles away from the bearings instead of accumulating.

I also claim the stationary axis of the paddle, so secured to the framing that it may be turned, when it becomes worn, so as to present a different portion of its surface to the bearing of the paddle.

EXTENSION TABLES—Edward A. Curley, of Westport, Conn.: I claim having the top, C, of the main or stationary portion, A, of the table, made loose, and arranged upon or suspended by springs, and to move up and down in guides or ways, substantially as and for the purpose set forth.

PRUNING TREES—W. W. Harvey, of Saltville, Va.: I claim having the shank or bar, C, of the cutter or chisel, A, fitted within a socket, E, attached to a proper handle, F, the socket being allowed to slide or work on the shank or bar substantially as shown, and for the purpose specified.

COTTON PRESSES.—Caleb S. Hunt, of Bridgewater, Mass.: I claim the peculiar arrangement of the respective parts of my improved press, by which I am enabled, with a single lever, to impart either a weak and rapid movement, or a slow and powerful movement to the platen of said press, or to any one of similar construction, viz., a non-revolving male screw attached to the platen is embraced by two or more matched and movable concentric screw nuts, whose uniting threads and grooves have a less degree of inclination than the threads upon the said male screw, and which are arranged in such a manner in relation to said male screw and the operating lever, as to produce at will, the desired movements of the platen, substantially as set forth.

REEFING SAILS—Henry D. P. Cunningham, of Bury Hants, England. Patented in England Nov. 30, 1850: I claim, first, the chafing spar applied to the after side of the sail yard for fending off the sail from the mast or rigging when rolled around the yard, as set forth.

Second, I claim the radius bar, D, in combination with the bonnet head, in order to permit the top of the bonnet to blow out in harmony with the belly of the sail, as described.

FIRE ARMS—Joseph C. Day, of Hackettstown, N. J.: I claim, first, the improved construction of the cap feeding tube, H, with a slide, H', on one side a row of holes, q, in in said slide, and another row of holes, p, in the side opposite, the one for the purpose of moving the follower along, and the other to prevent the follower returning with the slide, substantially as described.

I also claim communicating the motion from the tumbler to the slide, H', by a vibratory arm, i, or its equivalent, and also adding a spring thereto, in combination with the elbow slot, k, whereby said slide may be readily connected and disconnected from the lock and cap tube, substantially as specified.

I also claim extending the lower part of the main spring, from its pivot to, and causing it to rest upon the sear at a point very nearly over its center, in order to dispense with a separate supporting stud and sear spring, and also to enable the lower part of said main spring to be made nearly equal in length and strength to the upper part, substantially as described.

ATTACHING THILLS TO AXLES—Allen Greene, of Providence, R. I.: I claim the use of the leather, gutta percha, or other similar substance in attaching the thill or shaft to the axle.

REGULATING SPEED OF WINDMILLS—Frank G. Johnson, of Brooklyn, N. Y.: I do not claim the general principle of regulating windmills by the use of weights or governors revolving with, or by means of the wind wheel, and controlling the sails thereof, through the intervention of levers and rods.

But I claim, first, the method, substantially as herein set forth, of regulating the velocity of the windmill, and controlling the position of its fans by the use of the weights, D D D, with the springs, E E E, adjusted to slide from and towards the center of the wheel upon the spokes, B B B, and connected to the fans, A A A, by means of the rods, G G G, or their equivalents.

Second, I claim the combination together of the brake wheel, I, and arms, z z z, for the purpose of setting the fans edgewise of the wind whenever desired, said arms and brake wheel being formed and adjusted substantially in the manner set forth.

BRICK MACHINES—Richard W. Jones, of Green Castle, Ind.: I do not claim the pug mill, or mode of tempering the clay, for that has been previously used. Neither do I claim the reciprocating carriage, J, in itself considered.

But I claim feeding the molds, N, underneath the grate, E, and pressing roller, C, and discharging them therefrom by means of the reciprocating carriage, J, springs, L, catch spring, M, and roller, K, when combined, arranged, and operated as shown and described.

[Engravings illustrative of the operation of the above invention, are being prepared, and will shortly appear in the SCI. AM.]

SHINGLE MACHINE—A. Kendall, of Cleveland, O.: I claim, first, the described arrangement of devices for operating the approximating knives, whereby the shingles are shaved to the desired taper, according to the length of the shingle,

Second, the manner of raising the driver, E, from the slide, N, to the slide, N', by means of the carriage acting on the arm, R, in combination with the lever, R', and arm, r, and the action of the arm, D''', on the end of R''', of the lever, R, as described.

Third, the tumbler, P', as combined with the springs, Q' Q', operating in the manner and for the purpose set forth.

GRAIN AND GRASS HARVESTERS—Wm. F, Ketchum of Buffalo, N. Y.: I claim supporting the cutter bar, E and platform, H, when the implement is used as a grain harvester, by the bar or rod, G, in addition to the bar D, said bar or rod being arranged or attached to the cutter bar, E, and frame, A, as shown and described, for the purpose set forth.

SHINGLE MACHINE—Saml. M. King, of Lancaster, Pa.: I claim the combination of cast-iron boxes with adjustable bottoms and sliding lids, operating with the knives in front alternately, by connecting rods, so as to cut and regulate the size and taper of the shingle, substantially as described.

STEERING WHEEL STOPPER—Wm. R. Lavender and Atkins Smith, of Provincetown, Mass.: I claim constructing a wheel stopper and applying it so as to operate with the wheel and tiller, substantially as specified, viz., so that it may turn up and down on a hinge, and when down embrace the wheel handle, and be supported laterally under the strain of the wheel by devices essentially as described.

BIT FOR BORING FELLIES AND TURNING SPOKES.—Horatio McGrath, of Meig's Creek, O.: I claim the single twist auger with a tapering shell pod, for the purpose of boring and tapering a mortise at one operation, as described.

I also claim the tenon auger, constructed as described, with its auxiliary adjustable cutter to reduce the superfluous timber, and with its finishing bits arranged to cut a tapering tenon, with a shoulder at right angles to its axis.

MORTISING MACHINE—J. A. Mertiman, of Hinsdale, Mass.: I do not claim mortising by means of two chisels, P P, and a horizontal reciprocating cutter, K', irrespective of the peculiar means employed for operating said chisels and cutter, for they have been previously used.

But I claim operating the chisels, P P, and cutter, K', by means of the reciprocating plates, I O, attached to a plate, H, and provided with slots, k m, as shown, in which a pin, attached to the wrist, M, of a shaft, N, works, substantially as shown for the purpose specified.

SAFETY COAL HOLE COVERS—F. H. Moore, of Boston, Mass.: I claim the combination of the grating, E, and rods, g, with the cover, D, operating in the manner substantially as set forth.

DRESSING MILL STONES—R. D. Nesmith, of Lake Village, N. H.: I do not claim the method shown, for adjusting the machine radially or tangentially with the arbor, E; neither do I claim the method of operating the pick arm, C', for these devices have been previously used.

But I claim securing the back end of the pick arm, C', to a head, F', attached to a sliding plate, G', the head being allowed to turn on the sliding plate, whereby the length of the pick arm may be increased or diminished, as desired, and also the position of the pick arm varied in the machine, as set forth.

MAKING CLOTHES PINS—Ephraim Parker, of Burlington, Iowa: I claim attaching to a common lathe a cutter, working parallel with the mandrel in connection with a spout, the same motion operating both the cutter and spout.

I also claim, in connection with the above, a wheel and saw, the whole being a self-acting machine, taking square pieces of timber from the spout, and converting them into cylinders and clothes pins, at a single operation

I claim the combination as described, or any other combination, substantially equivalent thereto.

WASHBOARDS—Ira S. Parker, of Sharon, Vt.: I claim constructing the washboard of a series of cylindrical beaded bars, A, the ends of which are secured to boards B C, the beads, a, of the bars, being side by side in horizontal rows, so as to leave spaces, c, between them, substantially as shown and described.

DOOR FASTENINGS—Reed Peck, of Cortlandville, N. Y.: I do not claim to have invented any of the parts that make up my self-fastening door standards, as separately each is well known.

But I claim the combination of the spring with the gearing, by which the standard is rendered self-fastening, substantially as described.

CASTING METALS—Ezra Ripley, of Troy, N. Y.: I do not broadly claim exhausting the mold of air, previous to or while running in the melted metal; nor the use of molds having vents arranged for the escape of confined or compressed air; nor do I claim the substitution of a simple expansive air chamber for an air pump, in casting metals by atmospheric pressure.

I claim instantaneously removing the air which ordinarily fills the mold, into an air-tight expansive chamber, through crevice-like air passages arranged for the purpose, immediately after the openmouth of the mold is immersed in the fluid metal, all as described and specified, whereby the advantages set forth are attained.

CARGO PORTS FOR SHIPS—Charles Perley, of New York City: I claim the rim, 7, around the flanch, 6, that receives the bolts, 9, to secure the frame, f, to the vessel, said rim, 7, receiving a caulking on both sides, one against the vessel and the other against the shutter, g, thereby effectually preventing leakage, in the manner and as specified.

RE-MELTING IRON SCRAPS—Abiel Pevey, of Lowell, Mass.: I claim the described cast-iron retaining vessel, with one or more perforations through it, or otherwise formed, the vessel being for receiving and retaining the iron dust, and then be enclosed on all sides, so that both the vessel and the cast-iron dust it contains, will be remelted together, essentially in the manner and for the purposes set forth.

STRAW CUTTERS—S. T. Sharp, of Danville, Mo.: I claim arranging a circular knife, and a circular guard upon a common pivot, so that they will revolve one towards the other until they meet, each traveling the same distance, or the arranging two knives, circular, upon a common pivot, so that they will revolve towards each other until they meet.

DITCHING MACHINES—T. J. Stratton, of Waterloo, N. Y.: I do not claim the excavating wheel, as such has been used before for like purposes.

But I claim the secondary frame, movable about the main axle, and constituting the support of the excavating wheel, and of the earth conveyors, for adjusting the wheel to the required depth of excavation, and causing the conveyors to conform to each new position of the wheel, substantially as specified.

REVOLVING FIRE ARMS—Eben T. Starr, of New York City: I do not claim the cartridge cutters on the breech plate, nor any of the separate parts of which my improvement is composed.

I claim mounting the series of barrels on a central rotating spindle or arbor, provided with a breech plate, so that it can slide thereon, substantially as described, to be moved forward to receive the charges, and then pushed back and locked, to inclose the charge, as set forth.

And I also claim the method of elevating the cock by the finger lever until it is engaged and held by a spring catch, substantially as described, in combination with the trigger, so arranged, that it can be operated by the continued pull of the finger lever, to effect the discharge, substantially as described.

And I also claim in combination with the finger lever and trigger, arranged and combined substantially as specified, the employment of the shifting stop on the finger lever, so that it can be set either to effect the discharge, by the continued back pull on the finger lever, or by touching the trigger with the finger after the cock has been elevated, as described.

PLATFORM SCALES—F. M. Strong and Thos. Ross, of Vergennes, Vt.: We do not claim operating the beam by means of the bent levers, connected with the steelyard rod, through an intermediate lever.

But we claim, first, the use of corresponding concavities and balls, in combination with the proximate face of the intermediate bearing pieces, h, and the shoe, g, substantially as described, and for the purposes specified.

Second, the adjustable bearings, i, in combination with the pivots, c, substantially as described and for the purposes specified.

Third, the combination of the projections on the bearings, i, with the notches in the pivots, c, constructed as described, for the purpose specified.

YARN DRESSING FRAMES—A. J. Sutherland, of Lowell, Mass.: I claim the use and application of a lever, or its equivalent, one end of which presses on the surface of the yarn wound about the beam, and to the other end of which the friction spring is attached for the purpose, substantially as described.

I am aware that James and John Haworth obtained a patent in 1848, for a contrivance acting on the same principle as that described, but that contrivance was applicable only to looms, and could not, without material modification, be applied to dressers. I do not claim the use of my let-off motion as applied to looms, but only as applied to dressers and similar machines, excepting looms.

I do not claim the friction strap nor the spiral spring, as they have been used before.

FELTING HATS—J. S. Taylor, of Danbury, Conn.: I do not claim a series of rollers placed within a vat or frame, independent of giving two or more of said rollers a lateral vibrating motion, for they have been previously used.

Neither do I claim giving the hats a rubbing or vibrating motion, as that is a motion indispensable in all machiney for felting hats.

Nor do I claim the contrivance set forth, as an independent invention, but merely as an improvement on my hat felting machine, patented May 3rd, 1853, and the patent, if obtained, will be subordinate to the previous patent, and cannot be used without a license from the legal owner of the patent of 1853.

But I claim the combination of machinery, operating in the manner substantially as set forth, for the purpose of giving the hat a rotary longitudinal and vibratory motion, at one and the same time, thereby subjecting the hats, as they pass along the chamber, a, between the rollers, b b b b, to a kind of rubbing or friction, similar to the rubbing performed by hand, and therefore causing the hats to be felted in a more perfect and expeditious manner than by the combination of any machinery ever before used.

COATING DAGUERREOTYPE PLATES—J. H. Tompkins, of Buffalo, N. Y.: I do not claim the box containing the jar, as that has long been in use.

But I claim the construction and use, in combination with the common coating box of the jar, J J, with the porous diaphragm, D, and the orifice, C, in connection with the tube, E, and flask, F, together with the compress, K K', L, and its application, for the purpose of impregnating the lime or any other substance from retaining chemical vapors in the coating box with the vapor of bromine; and for the further purpose of continuously furnishing the chambers of the coating box, with a more regular, uniform and consistent supply of the vapor of bromine, or any other sensitizing chemical, substantially in the manner set forth.

CURTAIN FIXTURES—Lewis White, of Hartford, Ct.: I claim the lever pawl, c, in combination with the ratchet, b, and cord, e, so constructed and arranged that by pulling the cord, which operates the roller to wind the curtain, in different directions, or different angles, it will vibrate the lever pawl, so as to hold or release the ratchet substantially as described.

OSCILLATING ENGINES—Hugh Wightman and William Warden, of Alleghany, Pa.: We claim the arrangement of the plummer block, I, in correspondence with the steam openings of the hollow trunnion of an oscillating steam engine, and the steam openings of a suitable valve, so that the plummer-block lies contiguously between the trunnion and the valve, and furnishes more or less a seat, respectively, for the trunnion and the valve, substantially as described and for the purpose represented.

STEAM VALVES AS CUT-OFFS—C. H. Brown and Chas. Burleigh (assignors to the Putnam Machine Co.,) of Fitchburg, Mass.: We claim operating the valves by means of the revolving cams, h, in combination with the bent levers, d, and their combination with the governor, in the manner and for the purpose substantially as set forth.

LATH MACHINE—J. L. Brown (assignor to himself and Chas. Learned,) of Indianapolis, Ind.: I disclaim reciprocating knives for cutting laths, without regard to number and direction of movement.

I claim the vertical guide frame, F, in combination with the adjustable reciprocating rest, m, constructed, arranged and operating substantially as and for the purposes specified

GRAIN AND GRASS HARVESTERS—Gelston Sanford & Thomas and Stephen Hull, of Poughkeepsie, N. Y.: I claim placing or hanging the axis, D, of the driving wheel, B, in circular bearings, b b, which are allowed to turn in eyes or straps, a a, attached to the frame, A, the axis being placed eccentrically or out of center, in the bearings, h, substantially as shown and for the purpose specified.

HANGING MILL STONES—David Marsh, of Bridgeport, Ct.: (assignor to Thos. B. Stout, of N. J.; J. A. Cody, of Ohio, and David Marsh, of Conn.): I claim the mode of securing the carrier to the spindle, by means of the vibrating feather, inserted in the spindle, it admitting of being secured by keying in a recess in the cup, substantially as set forth.

HYDRO-CARBON VAPOR APPARATUS—Ari and Asahel Davis, of Lowell, Mass., and Charles Cunningham, of Nashua, N. H.: assignors to A. W. Adams, of Lowell, Mass., J. B. Richardson, and Geo. W. Pettes, of Boston, Mass., and S. T. Sanborn, of Winchester, Mass.: We claim employing the heat set free by the generation of the hydrogen, to heat the hyero-carbon, used to impregnate the nascent gas, as set forth.

STEAM STOP VALVES—James McNab and Adam Carr, of New York City: We claim the attachment of the outer shell, B B, to the valve spindle, A A, in such a way that it can be removed at pleasure to repair the valve.

RE-ISSUES.

THRASHING AND WINNOWING GRAIN—Andrew Ralston, of Middletown, Pa. Originally dated Feb. 21, 1842: I claim, first, the peculiar construction of the chaff screen, Q', which consists of a thin plate of metal punched with a semicircular instrument, for the purpose of producing semicircular apertures, and at the same time leave the parts of the metal thus partly punched from said plate, overhanging said apertures, at an angle of 30 or 40 degs., or at any suitable angle greater than that of the plate, for the purpose of allowing the grain to pass through said apertures, and at the same time prevent the chaff and straw entering them, and thereby preventing choking.

And, secondly, the combination of the system of screens, the blower, and the elevators, X, for cleaning and conveying the cleaned grain, to the granary, or other suitable place of deposit, substantially as set forth and represented.

SEWING MACHINES—Thos. J. W. Robertson, of New York City. Dated originally March 20, 1855: I do not claim, in itself, the arrangement of the feeding dog and spring clamp separately operating upon the cloth on its one or outside surface, as such has before been done by the alternate action of these devices. Neither do I claim of itself a separate and constant spring pressure applied to the outside surface of the cloth when the feeding bar or dog is otherwise arranged to operate in connection with the spring clamp or hold, as specified.

But I claim, first, the combination of the spring clamp, D, with the feeding bar or dog, f, constructed, arranged, and operating together against the cloth on its one side or surface, substantially as set forth.

Second, the arrangement for effecting the feed; that is to say, setting the arm, F, of the feed finger at such angle to the table that the diagonal direction of the thrust will cause the reciprocating motion imparted to the upper end to produce, in combination with the table, a lateral motion thereon of the feed finger, as well as the requisite pressure for griping and feeding the cloth, as set forth.

[NOTE—The list of patents published this week is quite large. It is indicative of an activity among inventors, and also among the examining officers at the Washington Patent Office, that we are always glad to notice. About one-third of all the patents granted as above, were, as usual, obtained through the Scientific American Patent Office.

Omitting this week our customary explanatory comments upon the claims, we have made selections from the most interesting subjects among them, notices of which will be found in another column, under the heading of "Recent American Patents.]

Great Patent Case of Reapers.

MCCORMICK AGAINST MANNY—In the month of January, last year, a suit was rought by McCormick, in the U. S Dist. Cour Washington, to obtain an injunction against J. H. Manny, of Illinois, for infringement of the plaintiff's patent. The place of trial was changed to Chicago, where a final hearing was ordered to take place; and again, the final hearing was ordered to take place at Cincinnati, where the case was fully tried last June, and occupied the Court about three weeks. It was considered a most important trial with regard to several devices connected with reaping machines, and great interests were therefore at stake. Immense efforts were made in collecting testimony for both sides, and both parties employed very eminent counsel—the Hon. Reverdy Johnson and E. N. Dickerson by the plaintiff, and E. M. Stanton and George Harding by the defendant.

The Court, after hearing the testimony, and the elaborate arguments of counsel, deferred its decision until the 16th inst., when it was delivered by Justice McLean, in Washington, where the application for injunction was first made, and is in favor of the defendant, and is reported to be as follows:—

"First, That Manny's Reaping Machine does not infringe any of the patents of Mr. McCormick.

Second, That the leveler and reel-post used in Manny's machines are not the same, in form or principle, as the improvements patented by Mr. McCormick, in 1845, and are no infringement.

Third, That several useful improvements invented and patented by John H. Manny, are not covered by McCormick's patent, but are different in form and principle, and consequently no infringement.

The injunction was refused, and the blll dismissed at cost of complainant.

The Court fully sustains the validity of McCormick's patents, and pays a high compliment to the patentee.

An appeal has been taken to the United States Supreme Court."

The decision, as quoted, was reported by telegraph to this city, but we are of opinion that there must be some mistake connected with that report, because the points which the Court is stated to have decided are clearly such as are provided for by a trial at common law, and the decision of a jury.

Coals for London.

This city requires about three millions of tuns per annum. More than a thousand vessels averaging about 400 tuns burden are employed in carrying these coals.

Last Christmas Day is stated, in some of our exchanges, to have been the coldest ever experienced in Texas. Great damage has been done to fruit trees.

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New Method of Application for Artificial Heat

MESSRS. EDITORS—Under the above caption I wish to propose to those interested in the matter, the application of an agent which has never, at least to my knowledge, been used for domestic purposes, viz., superheated steam. Everybody is well acquainted with the defects of the present modes of warming buildings, and cooking. There are three methods of accomplishing the first object: 1. The direct use of fire in stoves, grates, &c. 2. Hot air furnaces. 3. The use of a heated material, such as steam or hot water, circulated in the building through a series of pipes.

The first method—which is the most common, and, in a great many instances, the only one ever applicable,—is also the most defective in regard to the expense of fuel, improper and irregular heat, trouble and dirt, danger from fire and injury to health.

The second, although much better for large buildings, is less objectionable. The frequency of destructive fires caused by defects in the flues, is proof sufficient for this assertion, not to speak of the nature of the hot air (so-called) distributed through the building, which is mostly composed of noxious gases, deprived of the necessary dampness.

The third system—that of steam or hot water pipes—would be the most perfect, but for one circumstance: it does not produce ventilation, and the renewal of the air in the rooms depends entirely upon the accidental opening of the doors and windows.

Now, in my opinion, all these defects could be done away with by the use of steam, heated to a sufficient degree. By leading steam from a boiler into a coil of pipes placed in a furnace, it (the steam) acquires a very high temperature, and its nature and properties differ entirely from the common or wet steam; it becomes what is called "dry," or "hot steam," and some persons have given it the name of *stame*. This remarkable agent has been applied with great success in several operations in manufacturing chemistry, such as the treatment of oils and the distilling of fats for the manufacture of candles, and in other cases where the object is, in addition to the exclusion of air, a perfectly regular heat; it is capable of many other uses, not thought of at present. When heated to a sufficient degree it is able to set a piece of wood or other combustible substance on fire, when it comes in contact with it in the presence of air. The method I would use for its application to the warming of buildings, is to distribute it somewhat in the manner of gas, that is, by iron pipes encased in a fire-proof covering, with a branch for each room, furnished with a jet and a faucet, and this jet opening into a drum, or sort of stove, of any suitable shape and size, combining ornament with a large heating surface. The drum should be provided with a tube, rather smaller than a common stove pipe, leading into the chimney flue, for the double purpose of carrying off the waste steam, and creating a ventilating draft. The perfect regulation of the heat would be easy, by means of the stop-cock, so as to admit more or less steam, and could be secured by suitable openings in the drum, which could be opened or shut at pleasure. It will be perceived that, in addition to a very regular heat, no noxious gases would be carried into the rooms, a perfect ventilation would be secured, and no undue dryness of the atmosphere would ever take place. The boiler and heating apparatus might be placed outside of the house, and the danger of fire from these be thereby obviated.

Its application to cooking purposes might appear strange to persons unacquainted with it, but from actual experiment I am enabled to state that it is the most perfect means of performing all the operations of cookery, including baking, roasting, broiling, and frying, besides boiling, and that by exceedingly simple apparatus. For instance, let the hot steam be conducted into an oven of the necessary size, supplied with a waste pipe to carry off the vapors, the supply always to be regulated by means of a faucet; and it is hardly possible to conceive the perfection with which a piece of meat or any other substance can be roasted in this way, all danger of burning any part of it being completely prevented. It may also be used, by a simple arrangement, for the purpose of drying wet clothes and other articles almost instantaneously, also for roasting coffee, &c. An apparatus might easily be contrived for the ironing of dry goods by its use.

Among the manufacturing purposes to which it may be applied with advantage are the baking of bread, biscuits, crackers, &c., the roasting of coffee and cocoa, the manufacture of British or starch gum, which is now done by roasting the starch in a kiln, and the distilling or subliming of certain chemicals, such as sulphur, vermilion, calomel, &c. It will be perceived that, although fit to use in the way proposed above, stame opens a wide field to inventors for improvements and new applications.

LOUIS BONNET.

New York, Jan. 1856.

(For the Scientific American.)

Treating Flannel to Prevent it from Fulling.

Being a constant reader of your valuable journal, I desire to present a few remarks on the article on page 134 relating to red and white flannel, and the property possessed by the one over the other, which prevents the red "fulling up" like the white.

Common red flannel is colored with the muriate of tin and the laca insect, as was described in last volume SCIENTIFIC AMERICAN—very seldom with cochineal. This "tin acid," when used in coloring, changes the property of the wool—the metal destroys the felting property of the wool—it flattens or kills it. Muriate of tin has a strong affinity for oxygen therefore all colors dyed with muriate of tin as a mordant, are faster than those which give off oxygen. Soap suds neutralize this acid, especially when hot; and so does the ammonia given off in perspiration. The changing of lac red flannel to a crimson color is a good test of the neutralization of the muriate of tin in the flannel. Strong warm soap suds, without rubbing of the flannel, will not full it up, nor change its red color much, and yet it will remove the grease and dirt without rubbing, as recommended by the SCIENTIFIC AMERICAN.

If white flannel be boiled with the muriate of tin—1 lb. of it to 10 lbs. of flannel—it will impart to it the same negative fulling property that it imparts to lac red flannel. The muriate of tin can be purchased for ten cents per pound, therefore its use for the boiling of white fiannel will not involve much expense. If white flannel becomes yellow when boiled in the muriate of tin, it is a sign that the flannel was not previously deprived of its grease or oil, and that it contained sulphuretted hydrogen; or that the acid itself—the muriate of tin—contained sulphuretted acid. This I have found to be the case with common muriatic acid, which I always strain through a woolen cloth before using.

If red flannel shirts, by frequent washing and sweating, become a dark crimson color, by the discharge of the muriate of tin, if a little of the latter be added to hot water, and the flannel steeped in it for an hour or two, the color will be restored, or greatly beautified.

E. C. H.

Lake Village, N. H., January, 1856.

[If it is the tin in the mordant, or spirits of the red lac dye used for flannel, which prevents it *fulling up* like white flannel, the common opinion in the rural districts respecting the negative fulling qualities of red flannel dyed with madder, must be wrong. The method described in the above for restoring the color of common red flannel is correct, and may be very useful to many of our readers. Military men who wear scarlet uniforms, can remove black iron, or dark ammonia stains from their coats by using some muriate of tin in hot water, and applying it to the spots with a sponge. A wine glass full of the muriate of tin added to a pint of hot water will be about the right strength to use. When the spots disappear from the cloth, the dilute acid must be absorbed from the coat, and the spots so treated be afterwards washed with hot water. This can easily be done with the sponge. When squeezed in the hand, and then applied to the coat, the sponge will absorb the spirits from the cloth, and *vice versa*.

Whether our correspondent is correct or not in relation to the effects of the muriate of tin being the preventive for the fulling of flannel, his hints are very useful, and will no doubt lead to experiments which will determine the matter fully, and thus be the means of increasing useful knowledge.

Machines Wanted by Farmers.

MESSRS. EDITORS—In the first place I want a corn stalk cutter: I have never yet found one having sufficient power and simplicity of construction. The universal fault within these machines is, they are forever out of "kilter,"—they are not strong enough to encounter the stalks of our large corn here in the West. Let us have a corn-stalk cutter, gentlemen, which is simple, powerful, and durable; which may be worked by hand or horse power, and I will warrant any man a fortune.

Another thing I want, is iron feeding troughs or boxes, for horses and cattle. Wooden feed-boxes need cleaning every other day to keep them perfectly sweet, when meal or shorts is fed twice a-day. It is quite a task to wash out thirty feed boxes three times a week, and a task which might be avoided could we but have these necessary appendages made nice and light, of cast-iron. Pig troughs of cast iron have been in use for many years.

But, most of all, I want a cheap and simple steam engine. If the steam engine could be simplified and cheapened, so that one of sufficient power for farm uses could be made for $100 or $125, the sales would be far more extensive and their use more general than that of the different kinds of horse-powers all put together. Of this there can be no doubt. Common horse-powers would very soon be numbered among the things that were and are no more to be.

FARMER.

Chicago, Ill.

Blueing White Paper.

A great deal of letter paper has a blue tinge, and this shade seems to be preferred by most persons. In a work called "Herring's Paper and Paper Making," the practice of blueing paper pulp is stated to have had its origin in a singularly accidental circumstance, which, not merely as an historical fact, but as forming an amusing anecdote, is perhaps worth mentioning:—"It occurred about the year 1790, at a paper mill belonging to Mr. Buttonshaw, in England, whose wife, on the occasion in question, was superintending the washing of some linen, when accidentally she dropped her bag of powdered blue into the midst of some pulp in a forward state of preparation, and so great was the fear she entertained of the mischief she had done—seeing the blue rapidly amalgamated with the pulp—that all allusion to it was studiously avoided, until, on Mr. Buttonshaw's inquiring in great astonishment what it was that had imparted the peculiar color to the pulp, his wife, perceiving that no very great damage had been done, took courage and at once disclosed the secret, for which she was afterwards rewarded in a remarkable manner by her husband, who, being naturally pleased with an advance of so much as four shillings per bundle upon submitting the 'improved' make to the London market, immediately purchased a costly scarlet cloak (somewhat more congenial to taste in those days, it is presumed, than it would be now,) with much satisfaction for the sharer of his joys."

It is a fact that the best bleached paper—that which is called *white*—is not really a pure white, but has a yellow tinge. This is also the case with bleached cotton cloth. To make the paper pulp and also cotton cloth a pure white after being bleached in the ordinary manner, they are colored (very lightly however) with blue, in the same manner that wearing linen is tinged by washerwomen. If a tinge of some red coloring dye drug like acidulated cochineal were combined with the indigo blue in tinging bleached paper pulp or cotton cloth, a purer white would be obtained than by the use of blue alone. A ray of white light is composed of three colors—red, blue, and yellow. If bleached cotton cloth, therefore, has a yellow tinge, it requires the presence of red and blue to make it a perfect white.

Dean Cotton.

The following from the New Orleans *True Delta*, relating to the above cotton, will be of interest to our cotton planters:—

"An occasional notice of the sale of a small lot of this article, at rather more than the prevailing prices, seems to be all the attention it receives from the public. Many persons have an idea that it is much less productive than the common short staple varieties. Such persons may do well to refer to the Patent Office report of 1853 for the following statement of A. M. Hana, near Danville, Montgomery Co., Texas:

'The fact that I made 51 bales of cotton, (Dean seed,) 500 pounds to a bale, 1,800 pounds to the acre, and 17 bales to each hand, can be well authenticated by all of my immediate neighbors. I had 70 acres of "hog wallow" prairie land, of a black and stiff soil, cultivated chiefly in cotton, oats, sweet potatoes, and Indian corn.

I planted my cotton very early, preparing the land in the best manner, and had no drawbacks to contend with from crab-grass, insects, unpropitious weather, nor evils of any kind. It was the second crop in the field, on which no cattle had been permitted to run, and had been made mellow and easy to work by copious rains and winter frost. It was well worked throughout the season with three hands, including myself, with four hands to save the crop.

Mineral Wealth of Russia.

Minerals of the most valuable and useful kinds abound in Russia. Salt is found in various places; but there is a district of country on her southern frontier, extending nearly in a line parallel with the northern coast of the Sea of Aral and the Caspian, and to the north of the line mentioned, and between both, where salt is found of the finest quality. Immense beds of sulphur have lately been discovered about Secamara, on the banks of the Wolga; and vast gold fields have been discovered around the sources of the Lena. Silver is most abundant at Nartshinsk, on the Chinese boundary. There is good reason to believe that all Siberia abounds with the precious metals. Very large fields of fine coal have been found in different parts of Russia, especially in the iron districts. To the westward of the Ural Mountains, and on the Don, a vast field of the very finest anthracite coal has been found, and is now working. The gold produced in the Ural Mountains was in 1851, $12,000,000. Besides gold and silver, Russia has a vast extent of iron mines, yielding metal of the very finest quality. There are also large mines of platina, copper, lead, and zinc.

Mineral Wealth of Lake Superior Regions.

The mining business has been very prosperous during the past season; and up to the close of the navigation, the total product for the year was 4855 1-2 tuns. The value of the copper at the wharves was $140 per tun, making the money value $679,770. The increase of this year's shipments over last was 1800 tuns, and it is estimated that those of the ensuing year over the present one will be about double. The Lake Superior copper contains silver, some having produced as much as 3 3-4 lbs. to the tun. Of the copper shipped from Lake Superior, 1600 tuns go to Pittsburg 2000 to Detroit, and the remainder to Cleveland and Boston. The Minesota Mining Company sold a considerable portion of last year's copper to Rothschild's house. It was smelted in Paris, and found to contain, besides the usual alloy of silver, a trace of gold.

Mineral Wealth of England.

Estimated value of the metalliferous productions for the current year:—

Coals, at pits	£23,000,000
Iron ore	3,000,000
Copper ore	1,300,000
Lead ore	1,500,000
Tin ore	700,000
Silver	200,000
Zinc ores	15,000
Salt, earths, sulphur, building stones, &c., &c.	3,000,000
Total	£32,715,000

[The above is from the London *Mining Journal*. We entertained the opinion that the raw mineral products of England were far greater than they are. They only amount to $158,667,720. The export of one American product—cotton—amounts to more than one-half of all the mineral wealth of England. The value of American cotton exported for the year ending June last, is $88,143,884. Of this nearly two-thirds were taken by England and her dependencies, the amount being $57,730,259.

Fat pork is employed on some of the Ohio Railroads for lubricating axles. It is placed, in thin slices, in the axle boxes.

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New Inventions.

Life-Saving Apparatus.

The following narrative of the recent loss of the schooner *Echo*, on the Jersey shore, near New York, contains a very clear description of the nature, value, and mode of operating various contrivances for saving life in cases of shipwreck. It is seldom that they are employed with such successful results as in the present case. The narrator says:

"When the schooner struck, the crew sprang into the rigging—the last resort for life—and calmly awaited the moment when the vessel's breaking up would give them an opportunity of being drifted ashore on the spars or timbers of the wreck. Hour after hour passed away, and daylight came with no prospect of succor. The cold was intense, and all the seamen were more or less benumbed with the cold. At daylight it was discovered that one of their number, the cook, was missing. He could not be seen anywhere, and it is presumed he must have fallen off the rigging or have been swept overboard when the vessel struck the bar.—Seven, eight, nine, ten, and even eleven o'clock arrived, but no signs of assistance could be discovered by the unfortunates. Seven hours was spent in hanging to the bare rigging, with the sea at times making a clean breach over them.

"About 11 o'clock Capt. Jennings discovered the position of the unfortunate men as they still hung clinging to the rigging. He at once started a posse of men to their relief who arrived at the scene of disaster—distance six miles—about 12 1-2 o'clock, P. M. The wreck then lay about 75 or 100 yards from the shore, and as the sea was running very high at the time, the wreckers momentarily expected to see some of the poor fellows washed off before the life-saving apparatus could be procured for their relief. The mortar was procured from station house No. 15, and the line being attached to the ball, the piece of ordnance was fired off toward the schooner; but, alas! the wire was rusted so badly that it snapped in two like a reed, and the ball fell into the water a short distance between the wreck and the shore.

"Another attempt was made to shoot the line to the schooner, which resulted to the entire satisfaction of all concerned. The ball was thrown across the bows of the vessel, and the line alighting on deck was eagerly grasped by those on board and made fast to the rigging. A hawser was then attached to the line by those on shore, and after a great deal of labor it was dragged through the surf, and properly secured on board the schooner. It was then fastened to a stake on shore, and being made as fast as circumstances would permit, a small life-boat was slung on it and dragged to the wreck by those on board. Into this the shipwrecked sailors crawled, and they succeeded, one by one, in reaching the shore. The situation of these men had been viewed by the residents of the shore for miles above and below the scene of the incident, who, with telescopes, witnessed the sufferings of the mariners as they hung, in the struggle of death, to the frail rigging of the ill-fated vessel."

[The life-boat mentioned consists of a small vessel closely decked over. It holds two persons only, who get inside, and are locked up water tight. This boat can be drawn through the surf and under water without injury to the occupants; the air within is sufficient to sustain life for the few minutes required to pass from ship to shore.

Austrian Electric Apparatus for Blasting.

A report has been laid before the Austrian Academy of Sciences by M. Ebner, Major of Engineers, on the subject of employing electricity, or voltaism, for the purpose of exploding mines of gunpowder, or blasting in stone and slate quarries, and other engineering operations. The former is preferred in the report, because the amount of effect of the voltaic battery depends on the quality of the conductor through which it acts. The apparatus employed by the Austrian Corps of Engineers consist of two disks, 12 inches in diameter, and the charge is made by merely placing a point between the plates. The conductor consists of soft brass wire, and each apparatus is furnished with 12,000 feet of plain wire, and 2400 feet of insulated wire, being coated with gutta percha. The explosive substance employed is a mixture of sulphur, antimony, and chloride of potash, which can be made with ease in the form of a cartridge, and placed at any part of the conducting line. With these machines explosions have been effected at a distance of a German league and a half; and 50 mines discharged, simultaneously, on a line of 100 fathoms. Under water explosions have been effected at 400 fms. distance, the conductor extending to the length of 500 fms., and the effects totally independent of season or weather. They have been in use at the marble quarries near Nieustadt for two years without the loss of a single life, and numerous discharges have taken place in the Danube, for clearing the navigation.

APPARATUS FOR REPLACING CARS UPON THE TRACK.

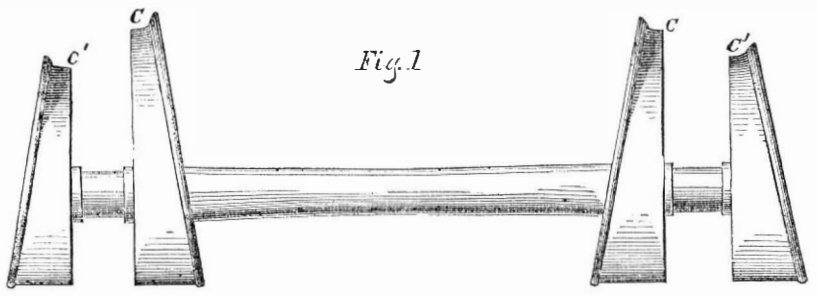


Fig. 1

Fig. 2

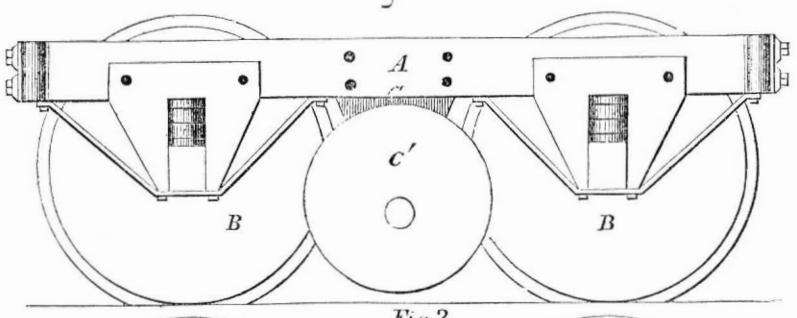
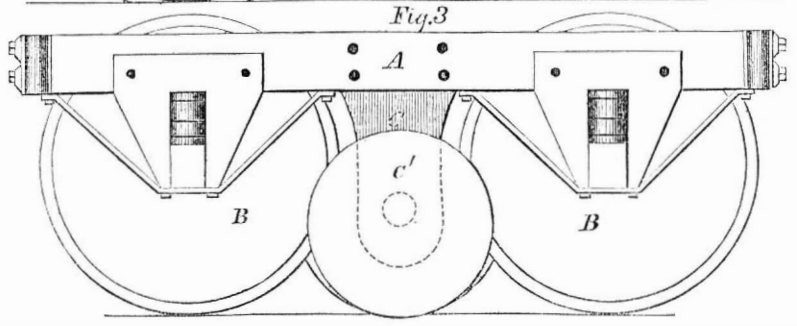


Fig. 3



The accompanying engravings illustrate a novel invention by Mr. F. L. Bailey, of Freeport, Ind., for replacing railroad cars upon the track, when from any cause they are thrown off. The device is self-operating, and is intended to effect the replacement almost instantly, before the cars have time to stop; in other words the idea is to compel the cars to jump back again on to the rail as quickly as they came off. If, on trial, the improvement practically accomplishes this feat, it is certainly an important discovery, and the inventor will be entitled to rank among the benefactors of his race.

The nature of the invention consists in furnishing the car trucks with an extra axle, having on each end a pair of flanged cam wheels, as shown in fig. 1. The axle is supported by bearings between the cam wheels, and is attached to the truck, A, between the ordinary wheels, B, as seen in figs. 2 and 3. The upper portions of the cam wheels, C C', are lighter and narrower that their lower parts; consequently when they are left in a state of rest, the heavier and broader parts will assume the lowest position, as shown in figs. 1 and 2; when the car wheels are on the track, of course there is no need of the cam wheels, and by reason of the greater gravity of their lower or shorter parts, they remain above the rail, out of the way, as in fig. 2. But when the car runs from the track, as in figure 3, one of the cam wheels, C', comes in contact with the rail, and revolves, bringing the long ends of the other cams down to lift the car, while the peculiar screw shape of the flanges on the cams tend, at the same time to push and pull the car sidewise to its original position. The cam wheels, C, being longer than the others, are intended to operate on the ground; the small cams, C', are expected to catch and hold their flanges upon the edge of the rail; the screw shape of said flanges, when in contact with the rail, tending to pull the car wheels to their places.

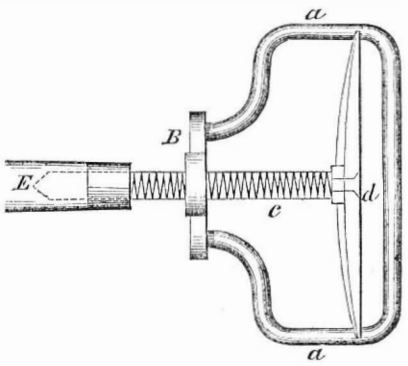
Should the device fail to operate, from any reason, before the car stops, it will be of great service in assisting to replace the same afterwards.

The improvement appears to be a good one. It is applicable as well to engines and tenders as to cars of every description, and the expense of construction is small. It involves no special alteration in the running gear, does not interfere with the operation of the brakes, is out of the way during the period of safety, but on hand at the eventful moment of danger.

The annual loss of life and property on railroads, occasioned by cars jumping from the track, is very great; the loss of time, which is also a loss of property, for "time is money," is also immense. Any practicable invention which mitigates these evils demands attention.

Further information may be had by addressing the inventor. His patent was granted Aug. 14, 1855.

Patent Mop Head.



The engraving aunexed exhibits a simple but very ussful improvement in Mop Heads, patented by Mr. Alexander Barnes, of Ashtabula, Ohio, on the 20th of Nov., 1855.

Referring to the cut, it will be seen that the mop is compressed or loosened by simply turning the mop handle, E, to which the screw, *c*, is attached; the screw passes through a nut piece, B, which also serves to unite the two ends of the bow, *a*; the mop is held between the bottom part of the bow and the cross-piece, *d*; this cross piece is pivoted to the lower end of the screw, and advances or recedes from the bow, *a*, according to the direction in which the handle is revolved; the mop is thus compressed or released at pleasure.

Those of our lady friends who keep house, will, we are sure, be pleased with the convenience afforded by this little contrivance for cleansing their floors. The cost must be quite trifling. Address the inventor for further information.

Youman's New Chart of Chemistry.

A few years since, a Chart of Chemistry, by Prof. Youman's, of Brooklyn, was given to the public, and owing to its peculiar method of illustrating Elementary Chemistry, it met with great success, and was generally introduced into our schools and academies. For the past two years Prof. Y. has been revising and remodelling his chart, and a second edition of it has just been published—by D. Appleton & Co., this city—greatly enlarged and beautified, and bearing the marks of careful correction.

The principle of illustrating chemistry, on which this chart is based, is peculiar: it represents by colored squares, chemical atoms, and their relative quantities by weight according to their respective areas: thus hydrogen, the lightest atom, is represented by the smallest square on the map, and is of a lilac color, having as its symbol, H., and equivalent, 1. Carbon, the next smallest square, is colored black, and marked with the equivalent, 6. Oxygen, the next smallest, is colored red, and marked with the equivalent, 8. Potassium, the largest square on the map, is colored blue, and marked 39. All the simple elements of chemistry are not represented on the map, as it would take a monster one to do this, but those which form the most common and numerous combinations of salts and compounds—as fats or oils, &c.

The simple elements represented are arranged in a vertical row, then opposite these, the binary compounds which they form are arranged in a second vertical row; then the trinary compounds in a third row, and so on. Thus, for example, light carburetted hydrogen gas is represented by a group of three atoms,—two small lilac-colored squares of hydrogen and one black square of carbon,—and lines are drawn from the squares of the row of simple elements, to show how they combine to form this gas, which illumines our streets.

The chemistry of combustion is also represented by squares, illustrating the burning of a candle or gas light. A candle is composed of carbon and hydrogen; combustion is carried on by oxygen uniting with the carbon and the hydrogen, and passing off from the flame in the state of carbonic acid gas and water. It also represents the new and old views of chemists on the salt-radical theory. According to this theory "all acids are binary—the products of of a radical, simple, or compound, with hydrogen, and all salts the result of a simple or compound radical with a metal." Hydrated sulphuric acid, according to the old view, is represented with three atoms of oxygen on one side of a square of sulphur and water on the other side, in the form of one equivalent of hydrogen and oxygen. According to the new view, hydrated sulphuric acid is shown as a compound radical named "sulphion," made up of four atoms of oxygen on one side, one of the sulphur combined with hydrogen.

We welcome this new map of Prof. Youman's as a valuable addition to the science of chemistry; it will be the means of doing a great deal of good by its simple and clear illustrations.

Coal in New Zealand.

Coal in large quantities has been found at Lyttleton, New Zealand, and is now selling at Christchurch, and at the plains in that province, at £5 10s. per tun. An alarm about the scarcity of fuel when the bush is exhausted of timber has now subsided. The fact that a supply of coal can be obtained at New Zealand, a steam-packet communication between Australia and Panama is now contemplated, and is a matter of considerable importance. The employment of more capital in the conveyance of coal will, it is expected, reduce the price considerably.

It would be a good plan, hereafter, for the people to elect the Speaker of the House of Representatives by a plurality vote.

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Scientific American.

NEW-YORK, JANUARY 26, 1856.

The Properties and Effects of Steam.

Although much has been said and written about steam, yet, owing to its wide application on steamships and railroads, in factories and mills,events are continually transpiring to bring it before the public in some new phase, or in some old one clothed in a new dress. When we take into consideration that there are tens of thousands of steam engines in daily use, any old scientific fact, not very widely known, or any new fact brought to light, or any common error connected with steam pointed out, must be of interest to a very large number of persons.

For many years we have entertained the opinion that at least eight-tenths of the accidents caused by steam boiler explosions might be set down under the terms *carelessness, ignorance, and defects of boiler*; but a correspondent of the Dayton *Gazette*, (Ohio,) entertains queer notions respecting explosions, believing they are caused by some mysterious agent, and denies that steam explosions take place "from defects of the boiler, or carlessness, or ignorance of those entrusted with their management." Let us endeavor to explode such negative views by positive proof. The steamer *Pearl* exploded her boiler on the 27th Jan., 1855, at Marysville, on the Sacramento river, California, by which eighty persons lost their lives—three times more than were lost by all the other steamboat explosions which took place last year. The report of the Inspectors on this case says, "this accident was investigated *most fully*, and the decision was, it was caused by *carelessness* or recklessness of the engineer, and he absconded after the accident." On the 30th of June last year, the steamer *Lexington* exploded her boilers on the Ohio river, and although the cause of the disaster was not fully substantiated, the Inspector's report states that "from the testimony obtained, the cause was an inadequate supply of water in the boilers,"—another case, no doubt, of ignorance or carelessness. The steamer *Oregon* exploded on the Detroit river on the 20th of April last, and respecting the cause of this, the Inspector's report says, "from such information as could be elicited the Board came to the conclusion that it was caused by the failure of the supply pumps, and consequent want of water in the boiler,"—another case, no doubt, of carelessness or ignorance. On the 7th of July last, the boiler of the steamer *J. Brooks* exploded on Lake Erie, near Ashtabula by which three lives were lost. The report of the Inspectors in relation to it, states the pressure of steam at the time of the accident to be less than allowed by certificate, and the water at the proper hight in the boiler, but "the Board decided that the accident was caused by a defect in the braces of the crown of the furnace." Thus, of the four explosions of boilers which took place last year on licensed steamers, three were undoubtedly caused by carelessness or ignorance on the part of those managing the boilers, and the fourth was caused by a defect in the boiler. Many more accidents would have taken place from defects of boilers only for the rigid inspection to which they were submitted. The Inspectors' report alluded to, says, on page 12, "defects have been disclosed by the very process of inspection, which, without such discovery, would have undoubtedly resulted in terrible accidents, involving loss of life and property." This testimony, from such high authority, confirms us more and more in the views we have hitherto entertained respecting the cause of steam explosions.

The science of steam is not so simple, nor so very generally and profoundly understood as some suppose. There are some very curious phenomena connected with water and steam, ignorance of which has no doubt led to the explosions of boilers, by those who had them in charge. Thus, water deprived entirely of atmospheric air can be quietly heated far above 212 degs., the boiling point of water, without generating steam, and it can be made to explode at a high heat with fearful violence.—Steam in contact with water in a quiescent state, may be heated up to 500 degs., or upwards, without a corresponding effect on the steam gauge. A boiler in such a condition, by the agitation of the water, through a stroke of the pump or opening of a valve, instantaneously developes a terrible force, by the superheated steam lapping up the water, and expanding immensely by becoming saturated steam. In the experiments made some years since by the Franklin Institute, steam was heated to 533 degs., while the pressure on the gauge was only 103 lbs., whereas it should have been 900 lbs. It is many years since Jacob Perkins made this discovery in relation to superheated steam, and he advanced it as the cause of very violent boiler explosions, and no doubt he was right.

In England there is an "Association for the prevention of steam boiler explosions," which numbers among its members the ablest engineers in that country. Their first annual meeting was held last November, but the yearly report has but recently been published. The Chief Inspector of the Association, in his report, says, "the deficiency of water is evidently the most frequent cause of explosions." He also mentions the case of a boiler that contained water and steam, the latter only indicating 8 lbs. pressure on the gauge, and yet it was heated so high that the upper part of the furnaces above the water line became red hot, and a block of wood on the top of the boiler was charred black. "From this it is evident," the report says, "that steam may be raised to a high temperature while in contact with water, and yet remain at a low pressure. This condition can only arise from a deficiency of water in the steam, and we may reasonably infer, that if this could by any means be supplied, we should have an almost instantaneous increase of density and pressure proportionate to the degree of saturation. This will fully account for the difference in intensity of many explosions, and why these should so often occur immediately after starting the engine."

Persons ignorant of these phenomena connected with steam, may, no doubt, be ready to attribute very violent explosions to some mysterious agency—electricity, or some invisible ether. Intelligent engineers, however, know how to obviate explosions arising from unsaturated steam, by keeping the water in their engine boilers continually in agitation.

We have been thus particular in presenting the foregoing information relative to the nature and effects of steam, in order that ignorance of the causes of boiler explosions may never be held up as an excuse for defects of boilers; or carelessness, or recklessnes on the part of those having them in charge.

Dangers of Railroad Traveling.

Railroad accidents have recently become very common. Two have taken place on the Hudson River R.R. within two weeks. The first was caused by one train running into another on the same track, near Poughkeepsie, on the 9th inst., by which three persons were instantly killed and a number dangerously wounded. The second was caused by the breaking down of the bridge over Spuyten Duyvel Creek on the 14th inst., when the train was passing over it, by which two persons were killed—the engineer and the fireman—and seven severely wounded. There were a great number of passengers on both the trains on which these accidents took place, and it has been a subject of wonder that so few lives were lost. The first accident was caused, it is said, by the incompetency of the "signal man," who did not warn the approaching train in due time, of the danger. The second accident was caused by the ice of the creek, during high tide, lifting the track off the spiles. This was, perhaps, one of those accidents which human wisdom could not provide against in that particular case, but certainly a bridge built on any railroad, the safety of which depends on the contingency of floating ice during a high tide, does not say much for the civil engineering of the road.

On the 14th inst. the train of the Morris and Essex Railroad, N. J., ran off the track, by which several persons were injured but none killed. On the same evening Col. Raymond, a passenger on the train from Philadelphia was jammed between tbe car when he had arrived at the end of his journey in Jersey City, and was very seriously injured.

Owing to the bad management of some of our railroads in relation to the safety and comfort of the passengers, we believe it would be a good plan for the several States to make laws, appointing supervisors and inspectors to exercise the same powers on railroads as those appointed under the "new steamboat law," for safety of life on steamboats.

The Mason Testimonial.

We have been notified by the Treasurer of this fund—Mr. S. T. Shugert—that in consequence of the return of Judge Mason to the chiefship of the Patent Office, it is deemed advisable to defer the presentation indefinitely, and in the meantime to return all funds to the original subscribers. Under the circumstances, perhaps, this is the best course that could be adopted. All persons, therefore, who have subscribed through us, are hereby informed that their orders upon us for the amounts they have paid in will be duly honored. We shall, perhaps, on another occasion, give them a new and better opportunity of testifying their approbation and appreciation of Mr. Mason's services.

The amount pledged, added to the sums paid in for this testimonial amount to between six and seven hundred dollars. Had the subscription been continued it is probable that a purse of two or three thousand dollars would have been made up.

Inventions in the London Crystal Palace.

It is well known that the Crystal Palace which stood in Hyde Park in 1851, still exists, and in far greater splendor than when it attracted tens of thousands within its walls in that year. It was removed from London and re-erected at Sydenham—a few miles from the metropolis—on a bold hight, where it overlooks the adjacent country. It is divided into different apartments or courts, for the display of ancient and modern art, and on a beautiful day it is sometimes visited by twenty thousand persons, from all parts of the world.

We have just received a circular from the Secretary—G. Grove, Esq.—of the Association to whom the Palace belongs, informing us that the directors have appropriated a portion of the Palace for a "Court of Inventions," in which it is proposed to receive and exhibit free of rent, specimens, models, and drawings of newly invented and patented articles. This is a very worthy feature connected with the Institution, and may be of advantage to American inventors who visit England with inventions for public exhibition and sale.

Recent American Patents.

Improved Gas Burner.—By Charles A Cummings and Cortland Douglass, of New London, Conn.—The metallic tip or burner through which flows the gas used for lighting, is perforated according to the form of light or flame that is desired. If, for example, an erect slender flame is wanted, the top of the burner is so perforated as to leave a small perpendicular hole; a hollow disk perforated at its edges with several fine holes, forms what is known as a "sun wheel burner;" two apertures made at angles so that two jets of gas will issue against each other and spread, produce what is known as the "fish tail" flame, and the tip is known as the "fish tail burner."

The present improvement relates to "fish tail burners," and consists in introducing a very small and thin blade of metal between the two apertures on the tip, so as to separate the jets. This device is alleged to serve two purposes: first, the gas jets strike against the blade and become more widely spread, and thus produce a broader flame than when they issue against each other. Second, the blade becomes highly heated and imparts extra caloric to the issuing gas, producing more complete combustion, and, consequently, better light. The improvement may be attached to the burners in use at a cost of a few cents.

Improved Hydrant.—By C. J. Cowperthwaite, of Philadelphia, Pa.—The design is to afford convenience in repairing, and to prevent freezing of the pipes in winter. By the simple turning of a rod the case of the hydrant may be connected with, or disconnected from the main pipe, and the internal parts of the hydrant, valves, etc., withdrawn for examination or repair. The labor of digging and withdrawing the hydrant from the ground, the soldering of pipes, renewing of stop cocks, etc., which has hitherto been always necessary in order to effect repairs, is avoided. There is a self-acting arrangement of the internal parts, which allows all water to escape from the hydrant, and thus prevents bursting of the pipes and overflows in consequence of freezing. It is a good invention.

Improvements in Mowing and Reaping Machines—By Wm. F. Ketchum, of Buffalo, N. Y.—This invention consists, first, in attaching the cutter bar to the frame of the machine, by means of a single bar of steel, made sufficiently elastic to yield to any unevenness of the ground; thus equipped the apparatus is a mower. The second improved feature relates to the machine when used as a reaper, and consists of a straining bar, which extends from the bottom of the platform to the frame, in such a manner that, while it adds support, it also counteracts the elasticity of the bar first mentioned, and renders the machine sufficiently stiff for reaping. Mr. Ketchum is the inventor of many valuable improvements in harvesting machines. His mowers enjoy a world-wide reputation for excellence.

Extension Table.—By E. A. Curley, of Westport, Conn.—This invention consists in having a box in the table for the reception of the extra leaves, said box occupying the place generally allotted to the drawer of ordinary tables. The bottom of the box is furnished with springs, upon which the leaves are piled. The spring serves to lift the upper one always even with the top of the table; convenience in handling the leaves is also afforded by the springs. Altogether, the improvement is a very useful one.

Instrument for Pruning Trees.—By W. W. Harvey, of Saltville, Va.—The pruning of the upper branches of fruit trees is generally done by means of a common chisel, mounted upon the end of a pole, the operator standing upon the ground. This contrivance answers very well except where the limb to be severed is too large for removal by one blow of the chisel; in attempting to give a succession of blows the chisel is rarely guided into the same cut, and the limb becomes hacked, the tree injured, &c.

The present improvement consists in elongating the handle or shank of the chisel, and slipping it loosely into a hole made in the extremity of the pole; if the chisel is now driven into the limb it sticks fast, and allows the pole to be drawn back a little, and thrust forward again against the chisel, with the same effect as a mallet; by repeating this operation the larger limbs may be expeditiously severed, with that smooth clean cut which is so necessary to the health of the tree. The end of the pole is, of course, furnished with a thimble, to prevent splitting.

Improved Harvesting Machine.—By Gilston Sandford and Thomas Hull, of Poughkeepsie, N. Y.—This invention relates chiefly to the manner of hanging the driving wheels and frame of the machine. The principle involved is rather novel in its application: suppose the axletree of a common cart instead of being made horizontal were bent in the form of a crank, the bow part being turned up, and the body of the cart being attached to the uppermost part of the bow; it is plain that whenever the bow was turned out of a perpendicular line the cart body would be brought nearer to the earth.

The above principle is exemplified in the present improvement. The axles of the driving wheels are hung eccentrically to the frame in circular movable bearings, by turning which the frame of the machine, together with the cutters and platform, are elevated or depressed at pleasure. The same feature permits an instant disconnection between the driving wheels and cutting gear. These movements are made by means of a convenient lever.

Paper Feeding Apparatus for Printing Presses.—By Samuel I. Chapman, of Charleston, S. C.—In this improvement the air pump is employed in connection with a perforated cylinder to suck up the sheets from a pile, one by one, carry them into the press, and discharge them at the proper moment. The discharge is effected by a cut-off arrangement, which causes the pump to change from exhaust to blast, and blow the sheet from the cylinder. Engravings would be required to convey a full idea of the working of this invention.

Machine for Dressing Millstones.—By R. D. Nesmith, of Lake Village, N. H.—It is doubt-

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less well known to everybody that the surfaces of all flour grinding stones are grooved over by means of chisels, so as to leave a large number of sharp edges to assist in the fine pulverization of the grain. When these edges become dulled from use it is necessary to renew them by regrooving. Until within a few years this labor was always done by hand, with mallet and chisel; but mechanism is now quite extensively employed for the purpose.

The present invention consists of a grooving apparatus to be attached by means of gearing to the spindle of one of the stones, in such a manner that when the device is made to move it will travel around concentrically, and cut concentric grooves upon the stones. Another feature of this improvement consists in a novel means of regulating the length of the arm to which the stone pick is attached; also in a method of regulating the force of the blow given to the pick.

Improved Fire Engine.—By John P. Cowing, Philo Cowing, and George Cowing, of Seneca Falls, N. Y.—The prominent feature in this improvement relates to the manner of operating the pistons. The piston rods instead of being made in one piece, are divided and jointed so as to form the well-known toggle joint. The toggles are connected by suitable levers to the brakes, and the whole apparatus thrown into a very compact form. The inventors allege that a fire engine made on their plan will surpass, in power and ease of operation, any other machine of the same capacity. It is also alleged that when the pistons reach the point where the greatest force is required, the toggles are almost straight, and that no more power is therefore needed at the end than at the beginning of the stroke.

Bolt Heading Machine—By Henry M. Clark, of New Britain, Ct.—This invention has for its object the formation of screw and bolt heads of various kinds, by upsetting the blank of round, bar, or rod iron of which the screw or bolt is formed. The invention consists in a novel arrangement of dies to upset and form the heads; also in certain means of operating the dies and gauging the position of the blanks previous to the heading operation; also in a peculiar way of discharging the headed blank from the dies. Drawings would be necessary to describe the precise operation of the parts.

New Mortising Machine—By J. A. Merriman, of Hinsdale, Mass.—This invention embodies a peculiar method of operating a reciprocating cutter and a pair of chisels, whereby mortises of varying sizes may be cut in a perfect and very expeditious manner. The machine may be operated either by hand or steam power. We regard the improvement as one of the best of its class.

New Wash Board—By Ira S. Parker, of Sharon, Vt.—The common wash board may be described as a piece of flat wood, serrated or grooved upon its surface. Mr. Parker combines a series of small round bars, so that when put together they present as good a rubbing surface as the common boards. Each bar has a number of round beads turned upon it, so that the wash board, when complete, bears some resemblance to the counting bead frames used in schools. The inventor alleges, that in the use of wash boards thus constructed, the water is not spattered around during the process of rubbing the clothes, as it falls through the spaces between the beads into the tub.—The clothes also, in consequence of the beads, are rubbed over the ends of the grain of the wood, and thereby subjected to more friction than the ordinary corrugated boards present; thus effecting a saving of labor.

Hat Body Felting Machine.—By James S Taylor, of Danbury, Conn.—This invention is an improvement upon a hat felting machine, formerly patented by Mr. Taylor, and which consisted of a number of rollers placed diagonally to each other within a vat. The rollers were so arranged as to form a chamber between them, of sufficient size to receive the hat body, which was forced through the whole length of the rollers by the rotation of the same and, by repeated rolling and rubbing, felted up or shrunk. All of the rollers above mentioned turned on a fixed axis, and had only one motion.

The present improvement consists in giving some of the said rollers two motions, viz., a lateral as well as a rotary motion. This simple change, we are told, accomplishes a highly useful result, by improving the quality of the work turned out. Hat body makers will understand and appreciate the invention.

NOTE.—Patents for all the foregoing inventions were granted by this government Jan 15th, 1856. For claims of the patentees see the official list on another page.

Recent Foreign Inventions.

WORKING STEAM EXPANSIVELY IN ONE CYLINDER—E. Carrett, of Leeds, Eng., has taken out a patent for such an arrangement of cylinder and piston as will cause the elastic force of the steam to operate twice, by being admitted first at high-pressure on one side of the piston, and afterwards on the opposite one, which is of a much larger area, where its expansion is completed before being finally condensed or discharged into the atmosphere. The trunk is made of such convenient size as to slide inside a suitable guide or chamber in the end of the cylinder, in such manner that the steam may act on the effective area, simultaneously with the area remaining of that side the piston; being thus guided and supported on both sides against the oblique pressure of the connecting rod, while the total surface of one of its sides is not lessened, upon which the steam acts on its second entrance into the cylinder. This is accomplished by constructing the cross-sectional area of the smaller ram of a different form to that of the closed chamber in which it slides, and by which it is guided, so as to allow the steam to pass freely from the cylinder into the vacant space between the two. The sides of the chamber, or hollow guide, can also be made adjustable, so as to compensate for the wear, in lieu of the piston rubbing against the actual sides themselves. To compensate for the inequality of pressure in condensing engines, which would otherwise be felt on the piston in the two directions of its motion, from the united effect of the steam and vacuum, the trunk is made a ram on that side the piston on which the steam first acts to work steam-tight in a closed chamber, the inside of such chamber being kept open by a pipe leading to the condenser, maintaining a constant vacuum inside.

PROPELLING VESSELS—James Pettigrue, of Drumcree, Ireland, has obtained a patent for propelling vessels by means of a solid piston working in a cylinder at the stern of the vessel, to which the water has access—the piston acting to propel the vessel by thrusting against the water. The claim is for an arrangement of mechanism to operate the piston, as the principle of propulsion is not new.

COMBINED IRON AND TIMBER GIRDER—R. McConnel, of Glasgow, Scotland, has obtained a patent for a girder or beam composed of two malleable iron bars or narrow plates connected together with stay pieces of wood, and with spaces for transverse joints.

PAYING OUT TELEGRAPH CABLES IN THE SEA.—R. S. Newall, of Gateshead, Eng., has secured a patent for preventing submarine cables from *kinking* while being laid down, a great deal of trouble having been experienced in their getting twisted.

The cable to be laid down is passed around a cone, or several cones, so that while it is being drawn off the coil the cone prevents kinks forming. The cable passes over a pulley above the cone, and on to a brakewheel, around which it takes several turns, and then passes down into the ocean.

PACKING FOR SPIRIT LAMPS—A patent has been obtained by G. T. Bansfield, of Brixton, Eng., for the use of granulated pumice-stone as a packing for spirit lamps, or any other vessel containing inflammable hydro-carbon.—This packing is stated to insure greater safety.

PERMANENT BLACK DYE.—T. Richardson, chemist, Leeds, Eng., has obtained a patent for producing a permanent black dye on woolen cloth, by mordanting the cloth with bi-chromate of potash first, then submitting it to a bath composed of sulphate of indigo and other *suitable dying materials*. The words in italics are those used in the London *Mechanics' Magazine* from which we condensed the above. The bi-chromate of potash is a common mordant for a black color on woolen goods, and sulphate of indigo is a fugitive coloring ingredient for dyeing blue. We would like to know what "the other suitable dyeing materials" are, which render this color permanent. It would be a very useful receipt for many of our woolen dyers. We can suggest to them the use of camwood with the sulphate of indigo as being in all likelihood the dyewood to accomplish the object.

BREECH LOADING FIRE-ARMS.—C. C. E. Minie, the inventor of the rifle bullet which bears his name, has obtained a patent embracing two claims for breech loading rifles. The first is for a swiveling piece, to which is attached a device that holds the breech and barrel firmly and solidly. The second is for placing the cartridge into a recess without the necessity of inserting it in the barrel, to load the rifle.

SIDE SCREWS FOR STEAMERS—An English patent has been granted to Capt. Whittaker, of Buffalo, N. Y., for the application of screw propellers to the sides of steamers instead of their stern, combined with high pressure engines on the hull. This new mode of steam propulsion is familiar to our readers, having been described in our last volume. It is the application of locomotive engines and side screws to steam vessels.

NOVEL SYSTEM OF PRINTING—Joseph Silberman, of Paris, has obtained a patent for printing by producing a pressure of air, gas, steam, or a liquid, through one or more mediums in the interior of an elastic holder for inking and printing on surfaces, especially those which are curved.

PURIFYING OILS AND FATTY MATTERS—A patent has been granted in England to A. F. Cossus, of Sardinia, for purifying oils and fats by agitating them with turf charcoal and schist. They are then filtered through several thicknesses of cotton cloth, and at last through unsized or filtering paper. The oils thus treated are stated to be very pure.

[The above are mostly condensed from the London *Mechanics Magazine.*

Preserving Animal and Vegetable Substances for Food.

The following specification is taken from Newton's *London Journal* of arts and science. It has been secured by patent to E. Hartnall, of St. Mary Axe, England. If it is as good an invention as it is stated to be, and from the nature of the material used we think it is, it will prove to be of immense benefit to our ham makers. The patentee describes his process of preserving animal and vegetable substances as follows:—"1. Take two-thirds gelatine and one-third treacle (thick molasses,) and place both together in a vessel heated by steam; the gelatine must be previously soaked in water to enable the two to unite; add a small portion of spirit to remove the watery particles. 2. Have another vessel at hand containing a composition or two-thirds treacle and one-third gelatine; this, having once boiled, must be kept in a liquid state, by the smallest degree of heat being applied necessary for that purpose. Raise No. 1 composition up to the greatest degree of heat without its actually boiling; then immerse the meat therein, and there let it remain for a time sufficient to neutralize the gases; which time must be determined by its size and weight, and the quantity of bone it contains.

When the meat is withdrawn from No. 1 vessel, its internal heat will cause the liquid to run off; it is therefore necessary to immediately immerse it in No. 2 vessel, and there let it remain till it may be withdrawn with safety. On being exposed to the air, the substance becomes hardened, but is as elastic as india rubber. The meat is hermetically sealed. A third coating may be applied when the first has set, and the meat be immediately wrapped in canvas, which firmly adheres to it.

Having thus stated the nature of the said invention, I will proceed more fully to describe the manner of performing the same:—

"1. MEAT—Have in a vessel treacle and gelatine, in the proportion of three-fourths treacle to one-fourth gelatine; bring this composition up by steam or otherwise to 215 degs. heat. Then, and not till then, immerse the meat therein—keeping it down by means of a weight made to fit the vessel—let the meat remain in this vessel for the space of fifteen minutes to each pound, when it may be withdrawn. By this process, the decomposing gases in the meat are completely neutralized—and it has, at the same time, undergone a rapid process of curing or pickling. On no account must the composition be allowed to boil, and great care must be taken to have the heat uniform and regular. To improve the flavor of the meat, salt, spices, garlic, &c., may be mixed with the treacle. This meat may be smoked or otherwise dried.

2. When the meat is withdrawn, hang it up in a cool dry place for about twenty-four hours, and wipe off with a sponge the moisture from the exterior; then immerse it in a vessel containing one-half treacle and one-half strong gelatine, with a small portion of isinglass, dissolved together, and sufficiently heated to be kept in a liquid state. This process hermetically seals the meat, and causes it to retain its moisture.

3. When the coating has hardened on the exterior of the meat, re-dip it, and then cover the surface with charcoal powder. This process protects the coat from mildew, and facilitates the handling of the meat in packing.

4. FISH—Subject mackerel, salmon, cod fish, &c., to the same degree of heat as in No. 1 process, but in olive oil; when cold, hermetically seal them, according to No. 2 process.

5. VEGETABLES coated according to No. 2 are protected, as with a coat of india rubber, from the influence of the external air."

The Philosophy of Sneezing.

A sneeze always indicates that there is something wrong. It does not occur in health unless some foreign agent irritates the membranes of the nasal passages, upon which the nervous filaments are distributed. In case of cold, or what is termed influenza, these are unduly excitable, and hence the repeated sneezings which then occur. The nose receives three sets of nerves—the nerves of smell, those of feeling, and those of motion. The former communicate to the brain the odorous properties of substances with which they come into contact, in a diffused or concentrated state; the second communicate the impressions of touch; the third move the muscles of the nose, but the power of these muscles is very limited. When a sneeze occurs all these faculties are excited in a high degree. A grain of snuff excites the olifactory nerves, which dispatch to the brain the intelligence that "snuff has attacked the nostril!" The brain instantly sends a mandate through the motor nerves to the muscles, saying, "cast it out!" and the result is unmistakable. So offensive is the enemy besieging the nostril held to be, that the nose is not left to its own defence. It were too feeble to accomplish this. An allied army of muscles join in the rescue, nearly one-half of the body arouses against the intruder; from the muscles of the lips to those of the abdomen, all unite in the effort for the expulsion of the grain of snuff. Let us consider what occurs in this instantaneous operation. The lung becomes fully inflated, the abdominal organs are pressed downwards, and the veil of the palate drops down to form a barrier to the escape of air through the mouth, and now all the muscles, which have relaxed for the purpose, contract simultaneously, and force the compressed air from the lungs in a torrent out through the nasal passages, with the benevolent determination to sweep away the particle of snuff which has been causing irritation therein. Such, then, is the complicated action of a sneeze; and if the first effort does not succeed, then follows a second, a third, and a fourth; and not until victory is achieved, do the army of defenders dissolve their compact, and settle down into the enjoyment of peace and quietude.

[This extract is from the *Journal of Medical Reform* published in this city, and is a little bit of philosophy "not to be sneezed at."

Gas in Flushing.

We learn from the Long Island *Times* that the beautiful village of Flushing (L. I.) is now illuminated nightly with gas. The gas was first let into the pipes on the 11th inst.

Alpine Ice.

It is scarcely possible to estimate the quantity of ice on the Alps. It is said, however that, independent of the glaciers, there are 1500 square miles of ice on the Alpine range, from 80 to 600 feet thick.

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TO CORRESPONDENTS.

J. S., of C. W.—The idea of driving two shafts from the same steam engine by piston rods leading from the piston through both ends of the cylinder, is quite an old one; we do not recollect to have seen it used, but it has been proposed to us many times as a subject for a patent.

I. J. W. A., of Md.—We are not engaged in the sale of patents, and do not know of any one who would be likely to become purchaser of yours. Advertising it is as good a system as you can adopt to dispose of it.

E. T., of Ind.—It is not new to ring the bell of a locomotive as you propose, by steam. A patent now exists for such an apparatus.

S. E. P., of Pa.—The work you propose to publish would no doubt find considerable sale if prepared with care. It affects a great interest, and would be useful.

T. & G., of Mass.—The plan you propose of carrying back all the smoke and gas right through the fire, will not answer in practice, for the reason that carbonic acid, which is the product of combustion, will tend to extinguish the fire. The smoke consuming furnace of J. Maule, patented in England more than thirty years ago, contains the essential elements of yours. It utterly failed for the reason suggested above.

J. H. P., of Ill.—Tea kettles with tubular bottoms are not new. The arrangement embraced in your stove appears to be new, and we think a patent can be secured for it. You had better send us a model of it. We shall mail you a circular of general information. Alarm gauges are not new. They are commonly employed for steam engines.

R. C., of Mich.—S. R. Wilmot and M. Ludwig secured patents last year for improved machines for sawing down trees. By reference to Vol. 10. Sci. Am., you will find descriptions of their inventions.

G. N. F., of Pa.—We cannot tell you how to destroy the yellow coloring matter of quercitron bark without injury to its tanning properties, but we can tell you how to make it give a different color. Use for this purpose a very minute quantity of copperas in the last ooze; it will make it a light olive color. It is a pity that the yellow color of this bark should be the nonsensical cause of injuring the sale of the leather tanned by it, when its quality is unexceptionable.

J. S. D., of Tenn.—Your plan of forming a steel twist barrel for cannon, then filling up with gun metal, strikes us in a very favorable light; but it would require experiments to determine its value correctly.

S. A. L., of ——.—You cannot obtain a power from permanent magnets, for driving machinery. The horse-shoe magnet on the end of a pendulum to turn a wheel studded with metal points interspersed with non-conducting points will not operate at all. The attraction will stop the pendulum. With an electro magnet to cut off at each side, you could move machinery, and this is done in the electric clock, but not by permanent magnets.

F. P., of La.—In answer to your inquiry we would state that applications for patents must always be made in the name of the inventor, and can be so assigned as to allow the patent to issue to the purchaser. The patent fee to an English subject is $500, to all other foreigners $300; a model is always necessary. We are much obliged to you for the information respecting the prevention of scale in the copper worms of sugar pans. We hope that J. B. Avequin, the chemist of New Orleans, who possesses the secret, and who furnished you with the method which you have used successfully, may be induced to bring it into public use for the benefit of our sugar planters.

L. P., Jr., of Pa.—We can make the calculations for you, but it would require considerable time. You can find them in almost any elementary work on mechanics.

P. O. G., of Pa.—A contrivance for the prevention of smoke, similar to the one you describe, was on exhibition in the steam boiler department of the French Exhibition. The principle consisted in distilling the gases from the coal in a separate space, carrying them underneath the boiler, and mixing them there with the quantity of heated atmospheric air requisite for combustion, which takes place so completely that there was not a particle of smoke. The economy of fuel was said to amount to 50 per cent., but it was considerably overstrained.

J. C. P., of La.—Dextrine is sold by druggists; it is sometimes called British gum. It is manufactured by submitting moistened starch, on thin iron pans, to a roasting heat in an oven. It is described on page 362, Vol. 7, Sci. Am.

N. H. H., of N. Y.—The pressure of water on the square inch, under a certain head, is equal to the weight of the column of water. It amounts to sixty-two and a half lbs. at the bottom of a tube an inch square and 144 feet high. Falling water comes under the law of falling bodies—the velocities are according to the squares of the times. It will fall sixteen feet in one second, and sixty-four feet in two seconds. Theoretically. nine hundred and sixty cubic inches of water will flow through an inch square orifice, under sixteen feet head, in one minute; but, practically, owing to the well known contraction of the fluid, only twenty-five forty-ninths, or 488·75 cubic inches will flow through in this period. Twenty-five per cent. is deducted for loss in a good scroll wheel.

R. W., of — You must endeavor to improve your penmanship. It was a difficult task to read your article, and to find, after all, that the subject was not of sufficient interest for publication.

Vermont—Your article on meteoric stones is very well written, but inconclusive; it lacks positive data in support of any theory opposed to that of Dr. Smith, respecting the moon's volcanoes being the source of meteoric stones. We had read Dr. Smith's views before they were presented to the Association for the advancement of Science.

S. N., of Me.—A tubular spar for ships could not be patented. A ship was recently constructed in England for the Australian trade, in which the foreyard of the vessel was made hollow, of quarter inch iron plates; it was 96 feet in leng; 23 inches in circumference at the slings; greatest circumference 6 1-4 feet. It weighed four tuns; a wooden spar of the same size, it is calculated would weigh twice as much—certainly an important advantage in favor of the iron yard, especially when its durability is considered. The first cost was a little more than wood. Iron must eventually supersede wood in many of its applications to ship building.

J. B. P., of N. Y.—Your oil saver may be new, if so, it can be secured by letters patent. If you will send us a model and description of it, we will examine it, and report our opinion of its novelty.

J. A. Wagner—We have an inquiry for Wagner's Clover Harvester. Will the inventor please call at this office for the letter.

B. M., of Ct.—Your ideas in regard to the motion of the earth agree with those of some modern philosophers, who, taking the motion on its axis at seventeen miles a second, say, "that if you take off your hat in the street to bow to a friend, you go seventeen miles bare-headed without taking cold."

R. U., of Del.—You can make a very good and durable cement for mending glass and china by reducing separately, to the finest powder, equal quantities of unslacked lime and flint glass, and as much litharge as both of them together, the proportions to be adjusted by measure after they are reduced to powder. Mix them well together, and work them up into a thin paste with old drying oil.

T. H. H., of ——To put on your india rubber sole you must get a cement of liquid india rubber, which is applied to the inner sole, then the outer sole is placed on this and pressed firmly down, to make it stick. The shoe is then kept in a warm place until the cement is dried.

J. L. M., of Mich.—Your order for $50 we paid your namesake, per order, on the 17th inst., in settlement of the 5th prize.

G. C. H., of Mich.—Two $20 bills were mailed to you on the 17th inst., agreeable to your request, in settlement of prize No. 7, which was awarded you.

H. S. B., of O.—A check for $25, being the amonnt awarded you on the 10th prize, was sent you by mail on the 18th inst.

M. M. G., of Ky.—On the 16th inst. we remitted to you a certified check for $75, which was the amount of your award for the 2nd prize,

J. F. L., of N. Y.—We sent you a certified check for the amount of your award for the 3rd prize, on the 14th, after deducting $14·25, agreeable to your request.

W. C. G., of Mich.—We cashed your draft for $55 on presentation, to pay the fourth prize, which was awarded you.

J. C. H., of Wis.—If you can prevent the wires breaking by expansion and contraction, you can obtain a patent for the specific method of doing this. By repeated expansion and contraction of the wire it loses its fibrous character and becomes crystalline, and is then easily broken.

T. D., of Ala.—Your air telegraph will operate, but it is not new. A similar plan has been proposed before, also the use of water in the tube in place of the air, which would be better in regions where the winters are mild.—It is not such a simple telegraph as the electric one.

A. L., of Canada.—The only difficulty a Canadian would labor under in applying for a patent would be the payment of the patent fee—$500.

O. H. W., of Tenn.—If you merely wish to file a caveat on your invention we can attend to it for you upon receipt of a sketch and description of it, and the caveat fee, $20. Our fee would be reasonable for preparing the papers. If you wish to communicate to the Government an invention, it had better be done through your Member of Congress.

J. G. S., of Miss.—We do not know any plan to obtain a good draft in chimneys overtopped by an adjacent building but by artificial means. No form of chimney can insure a draft in such a situation. If we knew of such a plan, we would be happy to furnish you with the information.

Moneys received at the Scientific American Office on account of Patent Office business for the week ending Saturday, Jan. 19, 1856:—

J. K., N. Y., $30; L. D. S., of Mass., $20; A. S., of N. Y., $100; G. H. W., of N. Y., $30; J. B. E., of Ind., $35; C. H. D., of Vt., $25; J. P. S., of Vt., $5; H. J. H., of Me., $30; D. F. L., of N. Y., $30; A. J. B., of N. Y., $30; W. J. B., of Del., $30; M. & W., of N. J., $25; W. H. C., of O., $25; S. W. & R. M. D., of Mass., $35; T. H. W., Jr., of Tenn., $55; A. H. H., of N. Y., $30; J. G., of N. H., $30; S. & L., of N. Y., $30; W. B. G., of N. Y., $30; I. A. H., of Mass., $10; J. W. T., of Ala., $25; R. B., of Conn., $55; I. S. T., of Conn., $25; W. W., of La., $20; S, B., of N. Y., $30; S. T., of Ind., $25; W. & B., of Me., $25; J. S. G., of N. Y., $7; F. R., M.D., of N. Y., $25; A. T., of N. Y., $25; R. A., of Ohio, $30; A. & T. S. S., of Ill., $25; R. G & S. M. S., of Mass., $42; E. S., of Conn., $35.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, Jan. 19:—

H. S. N., of Ct.; J. S. G., of N. Y.; L. V. B., of Ky.; J. P. S., of Vt.; C. H. D., of Vt.; L. D. S., of Mass.; G. H. C., of R. I., (3 cases;) W. H. C., of O.; W. & B., of N. Y.; M. K., of Mass.; F. R., M.D., of N. Y.; M. & W. of N. J.; J. S. T., of Ct.; H. F. & C. J. P., of Ala.; S. T., of Ind.; W. & B., of Me.; R. G., & Sons, of Mass.

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IMPORTANT TO INVENTORS.

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Private consultations respecting the patentability of inventions are held free of charge, with inventors, at our office, from 9 A. M., until 4 P. M. Parties residing at a distance are informed that it is generally unnecessary for them to incur the expense of attending in person, as all the steps necessary to secure a patent can be arranged by letter. A rough sketch and description of the improvement should be first forwarded, which we will examine and give an opinion as to patentability, without charge. Models and fees can be sent with safety from any part of the country by express. In this respect New York is more accessible than any other city in our country.

Circulars of information will be sent free of postage to any one wishing to learn the preliminary steps towards making an application.

In addition to the advantages which the long experience and great success of our firm in obtaining patents present to inventors, they are informed that all inventions patented through our establishment, are noticed, *at the proper time*, in the Scientific American. This paper is read by not less than 100,000 persons every week, and enjoys a very wide spread and substantial influence.

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W. P. N. FITZGERALD, Counsellor at Law—late Principal Examiner in the U. S. Patent Office—has removed from Washington, D. C. to the city of New York, 271 Broadway, (corner of Chambers St.) As heretofore, his practice is confined to Patent Cases, which he will prosecute or defend, as counsel, before the Supreme and Circuit Courts of the United States, also before the Patent Office, or the Judges having jurisdiction of appeals therefrom. 11tf

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Science and Art.

Reduction of Auriferous Quartz.

The following from the London *Mining Journal* will be interesting to many of our readers in Virginia, Georgia, and California:—

"We have had an opportunity, during the week, of visiting the laboratory of the Royal Panopticon of Science and Art, to witness some experiments by Mr. Harris, of Dolgelly, assisted by Mr. Ansell, the professional chemist of the institution, for the economical extraction of gold from its matrix. The process is, we believe, a modification of an old German method, aided by the extensive experience and important chemical discoveries of modern times. The ore is from the Chancellorsville Mine, in Virginia, a quartz deeply covered with the red oxyd of iron; this is first calcined, and reduced to an impalpable powder, which is then placed in a glass retort immersed in a cistern of water, kept up to boiling temperature; this is connected by glass tubes, with a generator, in which chlorine gas is produced by the decomposition of the black oxyd of manganese, acted upon by hydrochloric acid. This gas passing through, and thoroughly saturating every particle of the gold dust, hitherto invisible, converts the same into a soluble chloride of gold. The sand is then well washed, the chloride consequently dissolved, and a stream of carburetted hydrogen being passed through the solution, precipitates the metallic gold in the form of a deep purple powder. In one portion of the apparatus a particle of leaf gold was placed in a glass tube, to show the effects of chlorine on metallic gold, and which was rapidly acted upon by it, being converted into a beautiful green chloride, lining the inside of the tube like a web. The process is expected to be very economical on a large scale."

Analysis of Certain Pure Animal Oils.

	Sp. gr. at 64°·5 F.	Elements. Carbon.	Hydrogen.	Oxygen.
Winter sperm oil	0·87971	0·76490	0·11150	0·11360
Lard oil	0·91646	0·76658	0·10586	0·12756
Whale oil	0·92000	0·77511	0·11130	0·11059

In mixing these oils, and probably all animal oils, no change of volume occurs. The following are the specific gravities observed at and calculated for a temperature of 65°·25 F., equal volumes respectively mixed as under

Mixed Oils.	Sp. Gr. obsvd.	Sp. Gr. cal.
Winter sperm x lard	0·89735	0·89735
" " x whale	0·89905	0·89962
Lard x whale	0·91778	0·91750

If we assume as constant for all the mean of the respective factors of condensation from the original gaseous volumes into the volume of resulting liquid, we can calculate upon the specific gravity of said liquid the proportions of the elements it should contain. The following shows the result of such a calculation for the carbon in each of the above:

	Sperm O.	Lard O.	Whale O.
Carbon calculated	0·76118	0·78367	0·75854
do found	0·76490	0·76658	0·75511

The differences here between calculation and experiment, amounting to 1 2-3 per cent. for lard and whale oils, and 3-8 per cent. for sperm, are attributable, 1st, to certain errors of observation; 2d, to possible error in assuming the factor of condensation as constant in the different kinds of oil; and 3d, to probable physical variations in the constitution of different samples of the same oil. These variations may, however, be taken provisionally as covering the whole margin indicated by the above differences.

[The above analysis of oils is by Professors J. H. Alexander and Campbell Morfitt, of the Maryland University. Lard oil is now generally preferred to whale oil for domestic use. It burns with a clearer light, and has not the offensive smell of fish oil.

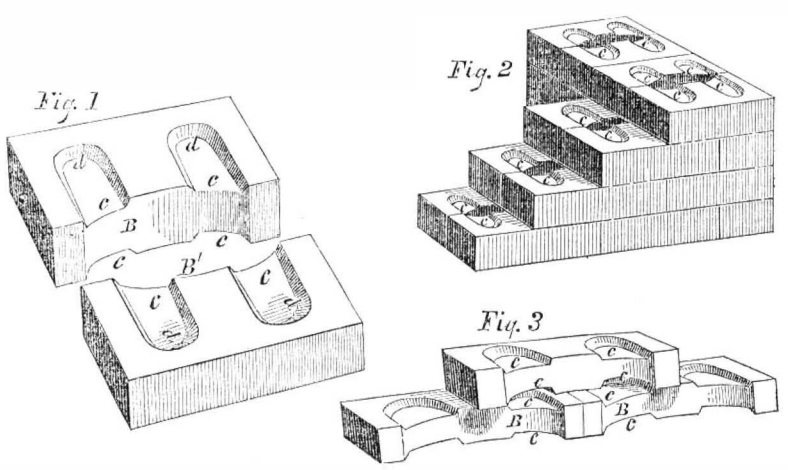
A Natural Electric Battery.

In old Calabar there is an electric fish named *Malapterurus Beninensis*, the electric properties of which are taken advantage of by the natives as a remedy for their sick children. The fish is put into a vessel of water, and the child made to play with it; or the child is put into tub of water in which several fishes are placed. This fish has been descibed in the *Edinburgh New Philosophical Journal*, by R. Thomson, who has resided for some years in that country.—He states that he had a tame heron, which was fed upon fish caught for it, and upon one occasion he swallowed a newly caught electric fish, which was no sooner down his gullet than over went the heron on his back. He had swallowed a natural electric battery, and was prostrated by the first shock. The fowl recovered, but never could be induced afterwards to dine upon *Malapterurus*.

Mortality at Different Periods of Life.

In an essay on the physiological law of mortality, Prof. Buchanan makes some peculiar observations. It is stated that the mortality is greatest in the first year by 40 1-2 per cent. The security of human life is greatest at thirteen—that is 5 in 1,000 die. In the first month of life 90 in 1000 die. The mortality does not increase in a regular ratio, but from interfering causes. The mortality is very great at twenty-four, much greater than it is for some years after. M. Quetelet admits this, and sets the subsequent mortality at twenty-nine, and attributes this to the persons who are most violent at that age. The cause of increased mortality about twenty three and twenty-four is probably the anxieties, fatigues, and dangers attending the entrance into life and the obtaining of a livelihood; and the mortality amongst this class is far greater than amongst those who have succeeded in making provision for themselves. The security of life amongst the laboring classes of provident habits, judging from the results by investigations, is shown to be greater than among the higher classes, who are comparatively destitute.

IMPROVEMENT IN BRICKS.



Mr. Edgar Conklin, of Cincinnati, Ohio, has lately obtained a patent for an improvement in the form of bricks, which promises to be of some importance. The accompanying engravings are illustrative of the invention.

The objects of the improvement are to secure greater beauty in the exterior appearance and finish of fronts, and also to render brick walls of all descriptions more secure than they are at present. This is done by a peculiar formation of the bricks which facilitates the use of grouting, cement, or soft slush mortar as a binding, in place of the common rough mortar. Grouting is a thin, watery kind of mortar, which, in time, becomes exceedingly hard and firm.

In the annexed engravings, fig. 1 shows the form of the improved bricks separately; fig. 2 exhibits their appearance when laid in a wall; fig. 3 is a section of wall.

The inner edges of these bricks, B, are made a little concave. The surfaces are formed with cavities or depressions, *c*, the back parts of which at *d* are the deepest. Except the depressions named, the surfaces are made flat in the usual manner, and come in contact, when put together, like ordinary bricks. In wall laying, the top surface of each course is to be washed over, by means of a white wash brush, with a thin coat of grouting or cement, or a thin stratum of slush mortar may be laid on. Grouting is then poured into the interstices, which in consequence of the openings formed by the cavities in the brick, has abundant opportunity to circulate among them, and as its nature is to solidify it forms the strongest kind of a binding. It is to be particularly observed that the grouting is confined within the wall, and, therefore, is not, like common mortar, exposed to the weather. In putting up house fronts, no pointing is required to be done, and no disfigurement, to be covered up with paint, is occasioned; on the contrary, the front ever presents the same unbroken smoothness and beauty.

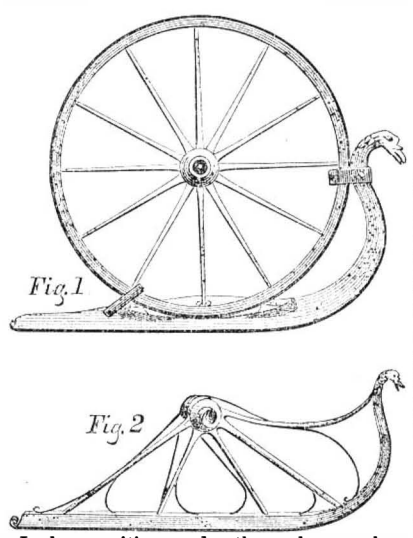
The inventor thinks that walls may be laid in less time with his improved bricks than with the common kind, and that in addition to the gain in time, there will be a saving in the expense of mortar; the latter article may be used, however, if found desirable. He also believes that by reason of the greater strength in the mode of binding, an important saving in the number of bricks will be effected, since walls necessary to sustain a given pressure will not require to be built so thick as at present. It is conceded by some masons, that a 12 inch grouted wall is equal to one of 16 inches mortar laid.

We are told that there is no difficulty either in the molding, pressing, or burning of these improved bricks, and no increase of expense. If the usual care is taken in sorting out from the kilns, the proper proportion of bricks that are sufficiently true and even for fronts will generally be found.

It is said that exposed walls must be taken down and relaid at least once in a generation, in consequence of the crumbling and destructive effects of the weather upon mortar. Such objections, it is believed, cannot exist where the present improvement is adopted.

We might mention other interesting particulars, but space forbids. Further information can be had of the inventor at Cincinnati. His patent bears date Jan. 1, 1856.

Snow Shoes for Wheeled Vehicles.



In large cities, and other places where wheeled conveyances are plenty, sleighs scarce, and sleighing times few, it is desirable to have some quick and handy means of adapting ordinary vehicles to snowy emergencies.

Two very simple methods suggest themselves, which we here present with engravings.

Fig. 1 exhibits a skeleton runner or shoe, placed beneath the wheel, and clasped in the manner shown. Attach one to each wheel, and the wagon is transformed into the *tallest sort* of a sleigh. Each runner might be so extended as to support two wheels. We observe that some of the fire engines in this city are furnished with shoes of this sort, upon which they slide along with great facility. The snow in our streets, at the time of this writing, varies from one to two feet in depth, rendering transportation by wheels a matter of extreme difficulty. Wheels, owing to their narrow bearings upon the snow, cut in and mire.

Fig. 2 shows a cheaply made runner, furnished with a hub, the object being to permit the removal of the wheel and the slipping on of the runner in its place; this done, the vehicle is ready for use as a sleigh.

The device shown in fig. 1, or its equivalent, has been often presented to us by different individuals who have invented the same, with inquiry as to whether it was patentable. We presume it has been re-invented by hundreds of people since the last snow storm. To save them the trouble of writing to us, we would state that the plan is as old as Greenland, and not patentable.

We wonder if our neighbors of the Long Island Railroad Company couldn't adapt these snow-shoe contrivances to their cars, with profit to themselves and convenience to the public? This enterprising concern, we are told, has suffered its rails to remain covered up in the snow for about two weeks past, and are now said to be waiting for the spring thaws. Should the season be backward, as sometimes happens, the Islanders will be in a sorry plight.

Horrible Effects of Foul Air.

The American ship *Waverly* lately sailed from China with 450 Chinese laborers on board, called Coolies, it is said for Peru or the West Indies. The captain having died, the mate put into Manilla to bury him. Some trouble ensued on board, when the mate shot two or three of the Coolies and drove the rest below, then went on shore to attend the funeral of the captain. On his return the hatches were opened, when, out of 450 men, 251 were dead from suffocation. The mate and crew were imprisoned.

Eclipses During 1856.

There will be two eclipses of the sun and two of the moon this year. A total eclipse of the sun will take place on the 5th of April, and an annular eclipse on the 28th of September, both invisible here. There will be a partial eclipse of the moon on the 29th of April, which will be visible early in the morning; and a similar eclipse on the 13th of October, also visible in the evening.

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